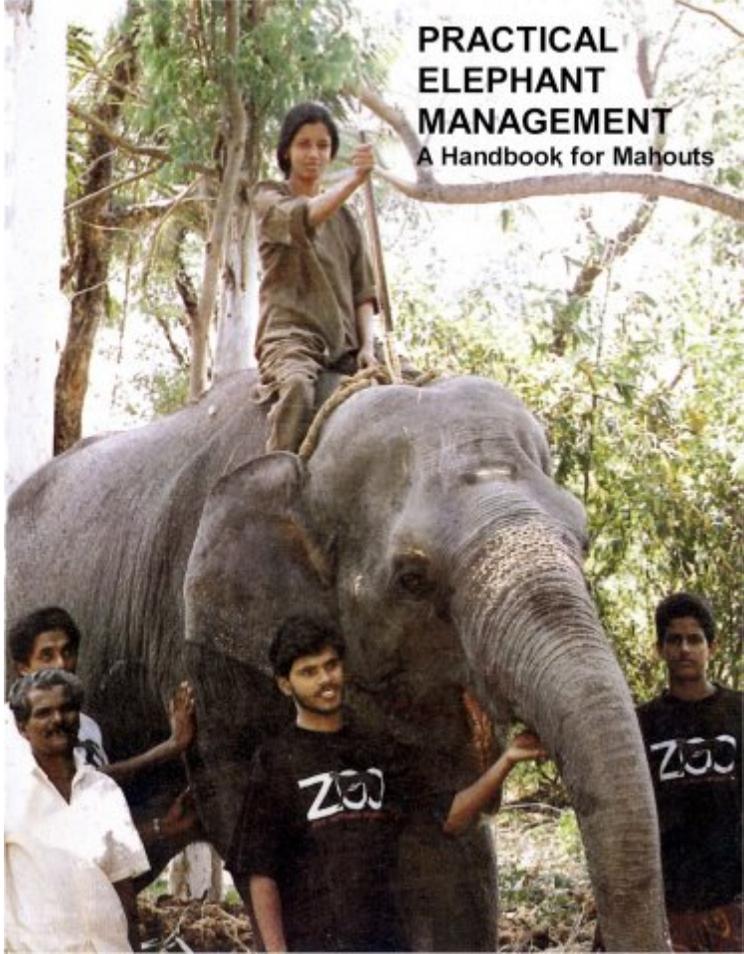


**PRACTICAL  
ELEPHANT  
MANAGEMENT**  
A Handbook for Mahouts



# Practical Elephant Management

**A Handbook for Mahouts**

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## **Practical Elephant Management: A Handbook for Mahouts**

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# FOREWORD

The elephant has been with man in war and peace as a trusted friend from time immemorial. Our epics and folklore are replete with legends about this magnificent giant. How man could tame the largest terrestrial animal is a question on which we can only speculate for answers. Possibly the initial associations must have started when both the man and the animal were forest dwellers and shared the same habitat.

The elephant has a position of distinction in our cultural and political history. Classical literature and other writings of those ages clearly point out that elephants have been accorded a position of dignity and divinity. There are also treatises dealing with the art and science of elephant maintenance. All this speaks of the strong bond man had with the elephant. This bond was based on respect for the elephant and a sound understanding of the needs of the animal. Sadly, this situation has changed recently. When man started using elephants for economic gain only, the traditional bond of love respect and understanding that the elephant and mahout shared underwent a transformation. The bond became exploitative. Health and welfare of the elephant became insignificant issues as long as the elephant was able to bring in money. People interested in correcting the situation have formed pressure groups and also pushed for regulations and legislation to further the cause of elephants. In addition to this short term strategy it is also necessary to improve skills in elephant management on a long term basis. "Practical Elephant Management: A Handbook for Mahouts " is an attempt to cater to this need.

Kerala is known as the "elephant state" for its large captive elephant population. The current estimate is that there are 600 elephants and at least 80% of them are tuskers. These elephants are an important aspect of Kerala's cultural and religious festivities. The mahouts who manage these elephants were respected and admired. The skills of mahoutery have been passed down for many generations of mahouts. It is a specialised profession requiring both intelligence and physical prowess. The mahout should have patience, tolerance and humility and at the same time presence-of-mind and quick reflexes. The profession can also be dangerous. There are many instances of accidents where the mahout is injured or killed.

Elephant lovers of Kerala fondly remember the names of popular elephants and their mahouts even today. Till recently mahouts were respected in the society.

In recent years, the quality of elephant management has degenerated. Increasing demand for elephants at festivals and functions have made elephant management a lucrative affair. This has attracted a new breed of youngsters with no traditional method of initiation in the art of mahoutery. These new aspirants had neither knowledge to handle elephants, nor respect for the work they have taken up. Not surprisingly many of them used various violent methods to control elephants. This led to casualties for both elephants and mahouts. Private elephant owners who see the elephant only as an investment have not paid much attention to the quality of elephant management. Elephant management deteriorated as a result.

These issues brought people with concern for elephants together and the Elephant Welfare Association, was formed in Trichur. EWA aimed at improving elephant management through a

multi-pronged strategy. As a part of this strategy the need to improve the capacities of mahouts were realised. The mahouts were taken through a training program which drew on the expertise of modern disciplines like veterinary sciences and traditional strengths like indigenous mahoutery and skills. The first training course was a collaborative effort of Kerala Forest Department, Elephant Welfare Association, Zoo Outreach Organisation ( Z.O.O.) and Universities Federation for Animal Welfare (UFAW at UK), the latter being an animal welfare organisation which provided financial assistance for the course. The first batch of trainees underwent a three month training programme. This was held in the last quarter of 1995.

The training programme was an innovative stride forward in elephant management in Kerala. However it also led to some misunderstandings. The traditional mahouts assumed that the trained mahouts would replace them from the current jobs. The elephant owners thought the training course has created the perfect mahout who could handle any elephant given to him. These misconceptions were gradually cleared. The organisers of the course consider that the graduates are fit only to be installed as second or third mahout to an elephant. The course is not merely an attempt at enhancing skills of elephant management. It also looks at ways of instilling an ethical dimension to elephant management. Thus self reliance, spirit of co-operation, perseverance, self respect and dignity of labour are seen as core values for a mahout.

‘Practical Elephant Management - A Handbook for Mahouts’ is the result of the experience gained from training two batches of mahouts. The sharing of ideas among trainees, trained mahouts, elephant owners, veterinarians and general public was an enriching experience and provided the inspiration for this book. The book covers a broad range of topics such as - management in captivity in various parts of India, evolution, musth, physiology, anatomy, disease, wild elephant and their conservation. Though the articles are based on cultural and traditional practices in various parts of India, I am sure that it holds universal lessons for elephant management.

This book has been written in a very lucid style. A *Malayalam* version of the book has been distributed to mahouts, elephant lovers, owners and elephant managers in Kerala.

I am extremely glad and privileged to write the foreword to this book, since I have been associated with the course at its conception and also during its implementation. I hope the book would be interesting and useful not only to mahouts, elephant managers and students of wildlife but also to any one who loves elephants.

T. M. Manoharan, I.F.S.

Chief Conservator of Forests

Kerala State Forest Department

# SECTION I

## INTRODUCTION

**Elephant Facts**  
**Significance of Various Internal and External Organs**  
**Evolutionary History and Sub-Species**

### ELEPHANT FACTS

#### Introduction to Elephants - some general facts

**Dr. Jacob V. Cheeran**

Elephants have always been fascinating to human beings because of their various peculiarities. Listed below are some interesting facts about elephants.

- Elephants belong to the family Proboscidae. In India, elephants are found in South India, North-eastern India and Himalayan valleys and Orissa.
- Asian elephants are of five strains and they are Indian, Burmese, Ceylonese, Sumatran and Malaysian.
- An Asian cow elephant weighs 2.5 - 3.5 tonnes and a bull weighs 3.5 to 5 tonnes.
- Bull elephants without tusks are called '*makhnas*'.
- Size of the neck is not proportionate to that of the head and so elephants have short necks to balance their huge head.
- The elephant is one among a few animals that use tools in their day-to-day lives. A few examples of such animals are discussed. A species of vulture uses a stone to break ostrich eggs. Some otters found in the Californian seas, use a stone to break open clam shells. A woodpecker sometimes uses a stick to stir insects hiding in a hole. Monkeys use a blade of grass to draw out ants from a hole. An elephant uses a twig to scratch itself and can learn to manipulate a variety of objects, to carry out a variety of activities.
- Elephants have nails rather than hooves. Most of the elephants have 18 nails, 5 in each of the front legs and 4 in each of the hind legs and very rarely 20 nails (5 nails each, on the hind and fore legs). The foot pad has a thick fat cushion, to provide a good grip, while walking over marshy and slushy grounds, as well as on rocks.
- It is possible to measure the height of an elephant, by measuring the circumference of the front foot. Twice the circumference, gives the approximate height.
- The upper ridge of the ear, starts folding inwards, from the age of 10 and folds about an inch, in 20 years. An elephant with a 1" fold on its ear, is considered to be 30-35 years of age, approximately. There are however, many exceptions to this rule.
- In the absence of a weigh bridge, the following formulae can be applied, to weigh an elephant
- $W = 12.8 (g+ng)-42811$ .  $W = 12.8 (g+ng)-4281$
- $W =$  Weight in Kg;  $g =$  girth (Chest circumference just behind the forelimb, in cms);  $ng =$

neck girth (in cms)

- $W = l \times g^2 \times 1.252$ .  $W = l \times g^2 \times 1.25$
- 300
- $W$  = Weight in Pounds;  $l$  = length (Anterior tip of the shoulder to point of tip, in inches);  $g$  = girth (in inches)
- Elephants love spending lots of time in the water and can swim long distances. They also love wallowing in the marsh.
- Elephants travel extensively, walking long distances in the wild, in search of food, shade, minerals and water. Since they have an enormous food requirement, they have to travel constantly to look for fodder sources. They do not stay confined to a single place for a long time which avoids habitat destruction.
- They walk at a slow pace of 4km/hr. Elephant walk has been made into a music, (in the film Hatari) which is popular all over the world.
- Elephants feed on all three tiers of plant life i.e., lower (grass), middle (bush), and upper (canopy) tiers.
- Elephants have very clean feeding habits. While grazing, they pull out a bunch of grass and dust the mud and dirt against their legs before eating it.
- Elephants drink 200-255 litres of water a day. I.e., 50-60 litres at a time, 3-4 times a day. A trunkful can retain 6-7 litres or even as much as 10 litres.
- Elephants can run short distances quite quickly (25 Km/hr for short distances), or 30-40 kms/hr, according to reports from Mudumalai Elephant Camp, in Tamil Nadu. Even with hobbles they can hop very fast, but cannot gallop like horses or run like cattle.
- Elephants can perceive sound frequencies inaudible to the human ear. Frequencies below the normal audible range are called infrasonic waves and those above the normal audible range are called ultra sonic waves. Examples of infrasonic waves are thunder, earthquakes etc. Elephants sometimes communicate with each other through infrasonic waves. This was discovered by Catherine Payne in Africa. The region between the frontal projection and the base of the trunk, produces vibrations. A simple experiment to demonstrate this fact can be done, by submerging (half way, to the middle of head) the elephant in water, facing the current and tickling the frontal area. The vibrations produced, can be seen as ripples, in the water. In an African savannah, elephants can perceive thunder several miles away and will move towards that direction to find the rain. Elephants have several kinds of communications between them. They are provided with large ears so that they can receive as many of these frequencies, as possible.
- An elephant's eye sight being very poor, it relies very much on its sense of smell. Elephants can recognise people by their sense of smell, even after several years.
- In Kerala, there is a misconception that, elephants fan their ears because they appreciate the rhythm of the *Panchavadyam*, a musical symphony. Although it makes a nice story, this is not true. Elephants fan their ears, to cool their body. Sweating, in other species such as man, helps maintain suitable body temperature. Since elephants have few sweat glands, they depend on their ears to regulate their body temperature. The ear is an important organ in removing heat. The blood from the various parts of the body is transported to the ear where they are cooled due to its fanning motion. This cooled blood, then flows back into the various parts of the body, thus bringing down the body temperature. It is observed that there is a difference of 1 degree centigrade in the temperature, of arterial and venous blood of the ear.

- The normal body temperature of the elephant is 96.6°F, ( 36.9°C)
- The skull has several sinuses and so the head is not as heavy as it may appear.
- The elephant has only two pairs of teeth, at a time and they are replaced 5 times during its lifetime. The number of ridges on the teeth increase with age . In most animals the teeth erupt from the bottom, but in elephants, they grow and push from the back to the front. The molars are replaced five times, in the lifetime of an Asian elephant.
- The tusk is an outgrowth or extension of the upper incisor or teeth. In males, it starts in two or two and a half years and grows 3 - 4 inches every year. The tusk has regenerative capacity. The pulp, which is conically shaped, is present along the inside of the tusk. One has to be careful not to damage the pulp, while trimming, or shaping the tusk. Teeth in Sanskrit are called *Dantam*, and thus the elephants are also called *Danti*. The elephant uses its tusks in a variety of ways. Humans may be right or left handed. Elephants also exhibit, a similar dexterity, for a particular tusk. The tusks continue growing, even after being cut.
- The Asian cow elephants have tushes, but African cows have tusks.
- The tongue has restricted movement and cannot be protruded out. The food can be hooked if placed on the tongue and pushed back into the mouth.
- An elephant's trunk is formed by the fusion of the upper lip and the nose. It is made of approximately 1,00,000 muscles.
- There is no naso lacrimal duct, running from the eye to the nose and so water runs out of the eyes constantly.
- A few sweat glands are present on the skin, found at the base of the nails. Since the sweat glands are deficient, the elephant sucks secretions from the mouth and sprays it on its body, with its trunk, to lower the body temperature.
- The skin is very thick and hence is called a Pachyderm. The skin has several folds and wrinkles, which help to remove heat. Though the skin is thick, the elephant will experience pain when injured.
- Males and females have a temporal gland, which produces secretions or temporal discharge . Temporal gland activity in bulls, is characterised by behavioural changes, particularly aggression, libido and disobedience to words of commands. Some cow-elephants occasionally exhibit temporal gland activity, but do not show any pronounced behavioural changes.
- Elephants cannot jump up, because their legs are not shaped correctly, for absorbing the shock of a jump. They may leap horizontally however, as their knee cap is placed very low, which helps them stand on or bend their knees, like humans.
- The heart of an elephant does not have a pointed apex, like other mammals. The ends are shaped differently and have a bifid apex.
- As in marine mammals, the testes of a male elephant are placed abdominally (close to the kidneys). During musth, the testes enlarge in size (functional hypertrophy).
- In a cow-elephant, the vulval openings are between the hind legs. Clitoris is large and may be 15-30 cms long, but they mate like all other quadrupeds or four legged animals.
- Elephants have two openings on the roof of their mouth called vomero- nasal openings, which act as scent glands. Mating consists of prolonged courting , short duration of penetration, several times a day. The special position of the vulva makes the penis (when erected), into a cobra shaped hood, to facilitate penetration. An ejaculate may have 50-100ml of semen.
- The gestation period is 21 months. Even when pregnant, ovulation takes place in cows.

- Calf at birth weighs 80-100 kg and 90-100 cms in height.
- Mammary glands are found between the forelegs. They secrete milk through several pores. Usually they suckle offspring for 4-5 years, but in captivity, the calves are weaned after 2 years.
- Although herbivorous, the cholesterol level in African elephants is high, compared to that of the local tribes (*Masai*), who eat beef.
- There is no gall bladder in the elephant.--
- Dog posture or 'sternal recumbency' posture is a relatively safe and comfortable position in other animals. In elephants this is dangerous, especially when they are tired. The pleural cavity around the lungs is absent in elephants, and they may die of suffocation if made to sit in the dog posture for long periods under sedation, or for any other purpose. Respiration rate is 10 PM (per minute) while standing and 5 PM during recumbency.
- Like humans, elephants are also prone to arthritis, because of the vertical position of their limbs.
- The total number of bones in the elephant's body is 282 and the total number of vertebrae is 61. The bones are not very thick and so the likelihood of a fracture is greater.
- Elephants can stand for long periods. Horses and passerine birds have checked ligaments, which help them to stand, while sleeping straight up. Similarly, elephants are also provided with such feet, that can be splayed, thus enabling them to stand for long periods. There was an elephant in Thrippunithara, Kerala, that stood up for 18 months, when it was sick. Healthy elephants in captivity, usually do not lie down during the day.
- Most animals, fold their hind limbs backwards, while lying down, but elephants fold them forwards.
- Captive elephants in Kerala, are given a restorative treatment during the monsoon, which is a practise for human beings too, in Kerala.
- Elephants are efficient seed dispersers. Seeds that pass out in the elephant's dung are highly viable and germinate easily.
- They defecate 15-20 times a day. The number of boli being 5-8 and weighing 1-2 1/2 kg. Elephants urinate 10-15 times a day and a total quantity of 50-60 litres is expelled. Inadequate water intake produce crystelluria.
- Elephants can unerringly locate and dig out water from the sub soil or river beds, during the dry periods.
- Elephants have a remarkable memory for events and people and are also believed to be emotional. While in musth, captive male elephants deliberately try to attack their mahouts.
- Elephants are gregarious by nature. In the wild when a baby elephant is born, it is trained and disciplined by every adult in the group. Captive born calves, on the other hand, turn out to be truants, as they are excessively pampered by humans. They turn out to be problematic adults, if not trained properly after weaning.
- Elephants have matriarchal groups and the leader of a herd is usually a cow-elephant. Males are loosely attached to the herd. In summer, when there is scarcity of food and water, the herds break up into smaller herds and when favourable conditions return , they re-unite to form a large herd with a larger number of individuals. Elephants in the wild spend a minimum of 60-70% of their activity in feeding. In summer during the day, the herds spend 2-4 hours a day resting, to prevent heat strokes.
- Elephant herds when threatened, have an interesting defence strategy. At first they all stand in a line defending. Then they round up the young ones and sub-adults into the centre and

form a circle around them.

- Elephants can never be completely domesticated. They always have a desire to return to the wild, unlike some other domesticated species, such as dogs and cats, which come back home.

Elephants are a valuable commodity and need to be handled with care and respect. In *Artha shastra*, an ancient Indian text, Chanakya (the author), described the value of elephants as equivalent to gold. Chanakya says that, a man deserved capital punishment, if charged of killing an elephant.

## SIGNIFICANCE OF VARIOUS INTERNAL AND EXTERNAL ORGANS

### Dr. K.C. Panicker

**Trunk:** The trunk is the most attractive feature in an elephant and makes it look different from other herbivores. Trunk is an extension of the upper lip. The shape and length of the trunk varies in various elephants. Some elephants have a very long trunk that touches the ground, where as others have very short trunks. The free end of the trunk is produced into a triangular finger like, tip. This organ enables the elephant to pick up the smallest of objects from the ground. The trunk is made of two types of muscles. It is by the action of these muscles that the elephant is able to extend or retract its trunk. The trunk has two openings on its free end. The opening within the trunk forms the nasal passage. The nasal passage runs into the centre of the forehead bump, followed by the gullet and finally branches into the lungs.

The elephant thus breathes and also sucks water, through the trunk. The trunk is also used for other things such as spraying the body with water, uprooting grass, pulling down branches, tearing the palm branches apart etc. The elephant has a highly developed sense of smell. Using the trunk, they can smell objects and people. Bulls use the trunk to check if a cow is in heat. They hold twigs or branches by the trunk to scratch their body.

**Tusks:** Tusks are modified incisors of the upper jaw. They arise from the front portion of the skull. 1/3rd of the tusk is embedded in the skull and the rest is visible from outside. 2/3rds of the tusk is hollow and consists of pulp. Tusks continue to grow throughout the elephant's life. In captivity, the tusks are trimmed once in every two years. Elephants with long divergent tusks are considered attractive in Kerala. Tusks acquire various shapes. They are also called "white gold", because of the demand for ivory. Ivory continues to be a priced commodity, for which several elephants have been killed. It is therefore rightly said that the tusk is the elephant's enemy. The tusk is used as a defence weapon during fights between elephants. They are also used to push trees down, lift objects etc. The Asian cow elephant and Makhnas possess tusks instead of tusks. African bulls and cows possess tusks.

**Ears:** Broad and fan shaped ears make an elephant attractive. An elephant that fans its ears constantly is considered healthy. The ears help balance the body temperature of the elephant. The skin on the ear is very thin and the veins can be seen very clearly. Injections and intravenous are administered through the veins on the ears. The sides of the ears begin folding inwards as the elephant becomes older. It is possible to make a rough estimate of the elephant's age by looking at

the folds. The ear folds about an inch in 30 years, meaning if an elephant has a fold measuring an inch, its age can be predicated as 30 years.

**Eyes:** The eyes are relatively small in size. The elephant cannot see objects at long distance. The colour of the eyes are normally honey or dark brown. A third eyelid within the eye protects the pupil. This makes it difficult to apply ointments on the eye. Hence medicines must be applied from the lower portion of the eye.

**Teeth:** The elephant possesses only molars and there are four of them at any given time. The upper surface of the teeth are made up of several ridges. The teeth are replaced constantly. New teeth arise from behind the mouth and push forwards while growing and the older teeth to fall off. The teeth are replaced six times in an elephant's lifetime. Thus there are a total of 24 teeth. Occasionally one may observe a single worn out tooth or a pair, on one side of the jaw. If a pair are seen then one of them is the remnant of the old tooth and the other is the rudiment of the new tooth. The teeth are replaced at various ages in an elephant's life time. The first set of teeth appear when the elephant is a year old. These are replaced when the elephant is six years of age. This is followed by further replacements at 9, 25, 50 and 100 years of age. The age of an elephant can be estimated by observing its teeth. The sixth set is the largest of all the sets and it measures 1 feet in length, 2 inches in breadth and approximately weigh four kilo grams.

**Fore and hind limbs:** The limbs are strong and pillar like in appearance. In [\*Malayalam\*](#), the forelimbs are called *nada* and hindlimbs, *amaram*. The joints between the bones are vertical which make it difficult for elephants to jump forwards. The limbs bear digits and nails. The digits are not visible as they are embedded within the skin. The nails are visible. Most elephants have 18 nails, 5 on each foreleg and 4 on each hindleg. The number of nails varies in number and some posses 16 or 17 nails. Those with 16 nails are considered inauspicious. It is rare to see elephants with 20 nails, which is considered as a very auspicious sign.

#### **Internal organs:**

**Tongue:** The tongues is fleshy and cannot be protruded outwards. While feeding a depression is found in the middle of the tongue where the food material is placed and folded backwards into the mouth.

**Digestive system:** Stomach is single chambered. The intestine is approximately 170 feet long. Digestion takes place in the large intestine.

**Liver:** Liver is large but gall bladder is absent.

**Heart:** has 2 apexes. The rate of heartbeat is 28 times per minute, but it is greater when lying down ie 35 times per minute. Heart beat is recorded from the veins behind the ears.

**Testis :** are located internally, on either side of the vertebral column.

**Temporal glands :** are located in the temporal region of the brain. They lead to a temporal opening which is located between the eye and the ear. During musth, the temporal gland becomes

enlarged and secretes a fluid, which runs out through the temporal opening.

## EVOLUTIONARY HISTORY AND SUB SPECIES

### Dr. K.C. Panicker

Evolutionary history of elephants dates back several million years, along the geological time scale. They underwent a series of changes over the years to evolve into the present form. They are placed under the family Proboscidae. A few ancestors of elephants are mentioned below.

**Moeritherium :** The fossils of Moeritherium were first discovered near Lake Moeris in Egypt, hence the name. Moeritherium is considered to be the ancestor of all Proboscides. This species was about 2 feet tall and looked more like a pig than an elephant. The eyes and ears were small and the trunk was absent. The evidence for its ancestry to elephants is in the skull structure and dentition. The upper jaw bears outgrowths of incisor teeth.

**Dinotherium :** This group is nicknamed as monsters because of their appearance. On the lower jaw a pair of backward curving tusks were present. They had a flat head and the trunk was quite long.

**Trilophodon :** Trilophodon received its name from the peculiar dentition it exhibited. The upper region of the first two molars were fused to form a crown. This group also were characterised by an extended lower jaw bearing two long tusks.

**Platybilodon :** They had short trunks and a large mouth. Each jaw bore a pair of tusks. The tusks of the lower jaw were short and spoon-shaped.

**Mastodon :** Mastodons were about the same size as modern elephant but of a much bigger build. Its head showed features such as a flattened forehead rising to a prominent domed crown, large curved tusks in the upper jaw and a well developed trunk. The body was covered with hair.

**Mammoth :** The mammoth is the most popular among ancestors of elephants. Their fossil remains have been found preserved in the icy ground of Siberia. Mammoths were extremely tall (measuring up to 15 feet) and possessed a pair of large curved tusks emerging from the upper jaw. Their body was covered with long, thick hairs as protection against the cold. Scientists claim that the present two elephant types -- Asian and African -- evolved directly from mammoths.

There are several differences between the two living species	
Asian elephants	African elephants
Smaller in size	Larger in size
Shorter in height	Taller in height
Highest point at the middle of the back	Highest point at shoulder
Comparatively smaller ears	Large ears
Long and large trunk	Comparatively smaller trunk

One finger like process at the tip of trunk	Two finger like processes at tip of trunk
Small tusks	Large tusks
Tusks only in males	Tusks in both sexes
Commonly found to possess 18 nails	14 nails are common
Back is unbroken and convex in curvature	dip on the back between fore and hind quarters
Bull-dog faced with twin domed forehead	Elongate, narrow face with flat forehead
Musth episodes usually in male	Musth in both sexes
Easier to domesticate	Comparatively difficult to domesticate

### Sub Species of Asian elephants (*Elephas maximus*)

The Asian elephants (*Elephas maximus*) are classified into 7 sub species, based on their geographical distribution. However scientific data for this classification is not available.

Name of sub species	Distribution
1. <i>Elephas maximus ceylonicus</i>	Sri Lanka
2. <i>Elephas maximus indicus</i>	India
3. <i>Elephas maximus bengalensis</i>	Northern India
4. <i>Elephas maximus dakamensis</i>	Southern India
5. <i>Elephas maximus burmanicus</i>	Myanmar
6. <i>Elephas maximus hirsutus</i>	Thailand
7. <i>Elephas maximus sumatranus</i>	Sumatra
<b>Sub Species of African elephants (<i>Loxodonta africana</i>) :</b>	
Bush elephant	<i>Loxodonta africana africana</i>
Forest elephant	<i>Loxodonta africana cyclotis</i>

# SECTION II

## HEALTH

### Signs of Health

**Common Ailments**

**Diseases in Captive Elephants**

**Colic**

**Impaction**

**Sick and Injured Elephants: Care and Cure**

**Health Care of Departmental Elephants**

### SIGNS OF HEALTH

#### Dr. Jacob V. Cheeran

A healthy elephant should be disease free and conduct its daily activities without indications of discomfort or abnormality. Regular monitoring of certain physical signs and behaviour will indicate an elephant's health condition. A mahout must regularly monitor his elephant's health, based on these signs. He must immediately notify his employer or doctor on observing signs of ill health or discomfort. Discussed below are points that will help monitor the elephant's health on a daily basis.

1. Elephants require plenty of water for their metabolic activities. It is estimated that on an average, they drink 200-255 litres of water per day. If the elephant does not drink sufficient water, it will become dehydrated, leading to several other ailments. In order to make sure that his elephant is drinking sufficient water, the mahout must check its trunk. The tip of the trunk should be moist with saliva. If the trunk is dry or appears cracked, it is obvious that the elephant requires more water.
2. Wounds, rashes and swellings should be subjected to immediate medical attention.
3. The insides of the mouth (mucous membrane), must be rosy pink in colour. The colour indicates sufficient quantity and good quality of blood in circulation. If the colour is pale, the elephant may be anaemic. In humans and other animals, the eye is examined for anaemia. Elephants are sensitive to an eye examination. i.e., they shut their eyes, tightly. Hence this method cannot be used for elephants.
4. The eyes should be moist all the time. This is a peculiarity of elephants.
5. Whitish layers appearing either on the cornea or the lens are not healthy signs. It could be an indication of cataract, corneal damage, or old age.
6. Several veins are visible on the ears. Scratches or bruises on this region must be treated immediately.
7. Elephants are susceptible to sinus infections. Discharge may run through the trunk during sinus infection.
8. The body temperature is checked at the briskette region. If the region feels cool to the touch, it indicates ill health.
9. Elephants develop swellings on their body due to injuries or abrasions. The swellings should be subjected to immediate medical attention.
10. The nails have to be trimmed along the sides. Mahouts should not scrub nails with rough objects like stones, because the protective waxy coating will be lost and nails will crack.

Sweat glands are located on the feet, above the nails. Therefore, it is normal to see moisture around these areas. Absence of moisture indicates abnormality.

11. The elephant's skin is an important indicator of water balance in the body. Wrinkles and folds on the elephant's skin prevent loss of water by evaporation from within, and maintain normal body temperature. If the skin feels resilient or elastic to the touch, when pinched, it can be assumed that the elephant is receiving adequate water. If the skin feels dry and non-resilient, it must be understood that the elephant is not drinking enough water.
12. The pulse is taken below the chin. This can be felt by the fingers where an artery crosses the bone.
13. Foot diseases are common among captive elephants. Causes and symptoms are discussed elsewhere in the text.
14. Multiple hairs are seen arising from one pore on the head, sometimes. It is noticed that, during illness these hairs come off easily.
15. The quality and quantity of dung and urine are indicators of health.
16. A mahout must regularly monitor his elephant's diet and drinking pattern, on a daily basis.

## COMMON AILMENTS

### Dr. Jacob V. Cheeran

A healthy elephant preoccupies itself with some activity, such as swinging tail, and trunk, feeding on palm leaves, playing with twigs, throwing mud on its back etc. Listed below are some common ailments that affect the elephants.

1. **Impaction** : Constipation leading to impaction, is the most common and serious condition seen in captive elephants in Kerala. Expert veterinary aid, which consists of fluids and pariental feeding, are important.
2. **Worm infestation** : Very common both in captive and wild conditions. Periodical deworming is a must in captivity.
3. **Foot rot** : Common during monsoons. Tethering site should be clean and should have provision for drainage.
4. **Surra** : A protozoan disease. A debilitating condition which can effectively be treated.
5. **Lice** : Seen at ear folds, inner aspects of limbs and tail switch. Easily treated with insecticides.
6. **Tuberculosis** : Often contracted from the affected mahout. Difficult to institute protracted treatment.
7. **Tetanus** : Often results in death caused by punctured and contaminated injuries. Patient will present a very pathetic sight.
8. **Rabies** : Commonly caused by dog bite. Post bite vaccination is effective.
9. **Injuries to the eye** : Often caused by improper use of the stick by the mahout, causing permanent damage or blindness.
  
10. **Arthritis** : Common in old animals. Total cure is difficult. Palliative measures are possible.

Often diseases like Anthrax, Pasteurellosis, Foot and Mouth disease and Salmonellosis have been reported to occur.

## **DISEASE DIAGNOSIS IN CAPTIVE ELEPHANTS**

### **Dr. Mohammed Shafi**

Elephants are susceptible to several kinds of diseases. Most of them weaken the animal to a large extent and others prove fatal. Each of these show specific symptoms. The symptoms have to be recognised at an early stage and the appropriate treatment provided.

#### **Impaction and colic:**

Symptoms:

- Lack of appetite. Animal does not eat fodder
- Body posture suggests discomfort
- Lays down and gets up frequently
- Eyes remain closed most of the time
- Brisket feels cool to the touch.
- Dung may be absent, fewer in numbers or smaller in size
- Stomach may look bloated
- Dull appearance and lack of interest in drinking water

To confirm impaction or colic, the doctor may apply oil on his hands, for lubrication and insert into the anus. If dung is not present, then it can be assumed that the elephant is suffering from impaction.

The elephant must be given complete rest during this period. It should not be allowed to haul timber or attend festival parades. Increased physical activity causes the intestine to swell and eliminate a lot of fluid through the anus. This loss of fluid makes the elephant weaker and the impacted condition prevails for a longer period. Therefore it is proper to treat the elephant at the same place instead of moving it to another convenient spot. Doctor should provide medicines to ease the pain, dilate the alimentary canal and also to stimulate expulsion of dung. Impaction and colic have been discussed as separate chapters, elsewhere in this book.

#### **Parasitic afflictions:**

Symptoms:

- The palate and insides of the trunk appear paler in colour. This is due to lack of sufficient good quality blood or blood supply, in the body.
- Frequent diarrhoea
- Live or dead worms may be visible in the dung. Round worms are 1-1/2 inches in length. Tapeworms are shed as segments and the segments appear as pale, flat, pieces. (locally, the segments are compared to the pulp or inner portion of the jack fruit). Amphistomes appear as red beads in the dung.
- Swellings may be visible on the lower jaw and abdomen.
- Lack of appetite and occasional stomach pains

The dung may be inspected in a laboratory, to look for eggs or cysts of the parasite. Based on the shape and size of the eggs, the type can be determined. Specific medication must be provided by an experienced physician, for treating the condition.

### **Surra:**

Symptoms:

- Swellings on the trunk, behind ears, and the brisket,
- Slower pace during timber hauling

The blood samples of infected elephants will reveal presence of microbes. The blood also appears very diluted, and less viscous. Immediate medical aid must be provided to save the elephant.

### **Tetanus :**

Symptoms:

- Loss of appetite
- Inability to move jaws freely or open the mouth
- The elephant may draw water in its trunk, but will be unable to squirt it into its mouth
- The limbs lose their mobility. The elephant is unable to move or fold its limbs.
- They may have occasional spasms
- Due to weakness the elephant is unable to stand upright and falls onto the ground

There is no treatment for this condition. The condition is brought about due to untreated wounds, caused by sharp objects. The only way to save the elephant is to provide a tetanus toxoid injection, as soon as an injury is observed.

### **Foot rot:**

Symptoms:

- The elephant rubs its feet together or rubs it against a tree or hard surface.
- Wounds are visible around the feet. The skin appears rough and coarse around these wounds.
- Pus-filled sores or swellings can be seen between the nails. These swellings enlarge and erupt to form wounds.
- Infected foot or feet, can be soaked in medicated water for a while, before the application of other medicines. This provides a relief to the elephant. The tethering area must be maintained neatly.

### **Arthritis and Paralysis:**

Symptoms:

- Swellings around the knee portion of the foreleg. The swellings are painful and the elephant drags its legs while walking. The swelling may move upwards onto the brisket region.

The condition is brought about due to uncontrolled use of restraining devices, especially the long pole. A combination of Allopathic and *Ayurvedic* provide the most effective treatment.

## COLIC

### A.K. Ponnappan

Colic is a condition of abdominal disorder, commonly seen in elephants. It occurs due to irregularities in diet and water intake.

#### Symptoms of colic:

- Reduced water intake and loss of appetite
- Tendency to eat mud, chewing bark from trees
- Drowsy appearance and motionless for a long time
- Mucoïd coating absent on the dung. It appears rough and dry, from eating dry fodder. Dry fodder does not contain water essential for metabolic activities.
- Stomach rumbles, probably due to improper digestion and gas formation
- Size of the dung is smaller than usual. It continues to get smaller, as the condition becomes chronic.
- Swellings may be seen on the feet, brisket and the stretch areas of the body.
- The trunk is twisted often, as if to expel mucous or gas. This is accompanied by coughs.

#### Local remedies:

1. On observing initial signs of colic, mahout must coax the elephant to drink more water. This is to prevent dehydration. Salt water is ideal. A few gms of fried, crystalline salt may be added to a bucket of lukewarm water. An adult elephant may be given water containing 150 gms of salt. The quantity must vary according to the elephant's size. Excessive salt is also dangerous.
2. Lemon grass oil (*Cymbopogon flexuosus*) is a natural medicine, sought by elephants themselves in the wild, as well as in captivity. A loaf of bread soaked in 30 ml of oil, can be fed to the elephant.
3. Branches and leaves of *murukku*, (*Erythrina indica*) can be provided.
4. A herbal mixture can be prepared. The ingredients are- Wild ginger, small, green chillies, crystalline salt, garlic and fried mustard seeds. They are ground into a paste and placed inside the elephant's ration or concentrate feed. This paste induces the elephant to drink water and further facilitating dung expulsion. Mud consumed during early stages, is also expelled along with the dung.
5. A mixture of hot ash and human urine, can be used for a hot compress, to treat swellings during colic.

6. Asafoetida relieves discomfort caused by accumulation of gases, in the stomach. 75-100 gms can be fed along with concentrates ie. rice, only during the early stages of colic. It should not be administered during chronic stage, as it absorbs water from the body. Asafoetida can be administered after novu also. 220 gms of fried and powdered asafoetida, can be mixed with concentrates on a weekly basis.
7. Wild ginger is also a powerful medicine for stomach ailments.

### **Care during colic:**

Colic if ignored, will lead to a chronic condition called black colic, and invariably the elephant would die. During colic, elephants must be given complete rest. The above mentioned remedies must be practised only under the guidance of an experienced mahout. If the condition continues to persist, mahouts must seek veterinary assistance.

## **IMPACTION**

### **Avanapparambu Maheshwaran Namboothiri**

Impaction is a commonly occurring ailment in captive elephants of Kerala. Impaction is a condition when the undigested food materials cause a blockage in the intestine. The condition is very painful and uncomfortable to the elephant. If not detected and treated at the early stages, impaction will lead to the elephant's death.

### **Causes of Impaction**

- Impaction is caused when undigested food materials are retained in the intestine. Elephants sometimes swallow food without chewing, especially if they have been starving for a while. Thus the fibrous part of the fodder may remain undigested, in the stomach.
- Excessive consumption of grains or seeds can also cause impaction. Undigested grains are likely to swell within the intestine, causing a blockage.
- Elephants in Kerala enjoy a period of treatment or rejuvenation (Sukha Chikitsa) every year. During this period they are given various kinds of nutritious food and medicines (herbal). After this treatment period, elephants go back to their normal diet. A sudden change in diet also can cause impaction.
- Excessive mud eating will also lead to impaction.

### **Remedies:**

Impaction is a serious condition and requires immediate medical attention. Until the doctor's arrival, mahouts may employ some safe first aid to alleviate the condition.

Hot compresses may be applied on the flanks and abdomen. This method may not work in case of impaction due to indigestion. A cloth compress of sand or fried sawdust (to provide dry heat) can be used, for all kinds of stomach ailment. It is a very safe method and relieves pain. If the elephant seems to recover after a few days, the mahouts may provide warm drinking water. They may also give a warm water scrub. During impaction, cold water must be avoided for drinking or washing. In the absence of a heating, water can be warmed under sunlight.

Massaging or fomentation requires previous practice. If not done correctly, it can cause serious complications. It is therefore advisable for inexperienced mahouts to learn the correct method of massage and fomentation from experienced mahouts or physicians.

Impaction may prove fatal in the absence of proper medical attention or for want of earlier diagnosis. It requires tremendous patience and dedication from the mahout's side to successfully save an impacted elephant.

## **SICK AND INJURED ELEPHANTS : CARE AND CURE**

### **Parbati Baruah**

#### **1. INTRODUCTION**

A working elephant may be exposed to many kinds of injuries and ailments. With the development of veterinary science, treatment of sick and injured elephants is not a problem. But in remote areas, experienced veterinary doctors and required medicines are not easily available and the mahout may be required to provide first aid or primary treatment before the services of a veterinarian are available. There are some traditional herbal-based medicines in different regions of India, which provide effective treatment against some common ailments of elephants. In the wild, elephants are known to use different types of herbs, climbers, leaves etc to treat themselves in case of sickness. Use of herbal medicines should, therefore be preferred to other kinds of medicines as far as possible.

#### **2. PREVENTIVE MEASURES**

The saying that "PREVENTION IS BETTER THAN CURE " applies to elephants in the same way as to human beings. Captive elephants are subject to injury or sickness more due to negligence of their keepers than to other reasons. The other thing that needs to be remembered is that the elephant is a very costly animal and one cannot afford to lose it permanently or even temporarily due to injuries or sickness. Hence elephants should be kept or used with great care. Some important precautions to be observed are discussed below.

##### **2.1 HYGIENE**

Experience shows that some of the common ailments of captive elephants relating to eye, feet and skin are because of filthy and unhygienic conditions of the *pilkhana* (stable). Therefore, the *pilkhana* must be kept clean and well drained. All the leftover fodder and dung should be removed to a distance and burnt periodically. The urine-drenched floor should be covered with sand and periodically treated with a disinfectant. The feet of the elephant may be washed with a solution of potassium permanganate at least once a week to guard against fungal attack. Elephants should be given regular bath and their toe-nails and tusks (if any) should be trimmed periodically. Cattle and other livestock should be kept away from the *pilkhana*. As a rule, captive elephants should not be made to share their grazing ground and source of drinking water with other livestock to avoid infection and contagious diseases.

##### **2.2 FEEDING**

An ill fed elephant is quite prone to diseases. Hence the elephant should be fed properly and timely. The food of the elephant should not be monotonous and a variety should be maintained to the extent possible. Extra diet (fodder and ration) should be provided to the elephants engaged in logging operation or working overtime. It is believed that regular feeding of the elephant with banyan tree leaves and branches, *Ficus* species, in dry months may cause eye problems. Similarly, an elephant having problem of digestion or worms in the intestine or which has recently taken earth, should also be kept off water for at least three days in such cases. In case of elephant calves which have recently started grazing, a careful watch should be maintained so that they do not take any poisonous plant.

### **2.3 WORKING OF ELEPHANTS**

Working elephants are usually observed to suffer from back sores or spinal injuries. The reason is either overloading or uneven loading on either sides of the elephant back. An elephant may also get back-injuries if its *gadela* (mattress) is not of proper specification or not suitably tied. An elephant may also get injuries on its legs if the knot of the rope with which the legs are tied is not correct or its hobbles are not of proper size or if some link of its chain is pointed and sharp. Gear of the logging elephant needs careful designing to avoid injuries.

Captive elephants should not be over worked and should be given proper rest. They should not be exposed for long duration to direct sun, chilly winds, rains and hailstorms. They should not be made to march over rocky areas, marshy land or quicksand. After a long march or heavy spell of duty, an elephant should not be immediately taken for bath or provided with drinking water.

### **2.4 PROTECTION AGAINST WILD ELEPHANTS**

Sometimes wild elephant visit a *pilkhana* and attack captive elephant, who being tied, cannot protect themselves. Mahouts should be alert and must chase away wild elephant using crackers. Elephant proof trench or electric fencing around *pilkhana* may also be useful.

### **2.5 PROPHYLACTIC ACTION**

Periodic deworming of elephants under the care of a veterinarian is very important. It is also necessary to inoculate the elephants against such contagious cattle-borne diseases as foot and mouth disease (FMD), anthrax, haemorrhagic septicaemia (HS) etc. a routine parasitological examination of elephant dung may help in timely detection of many diseases.

### **2.6 USE OF INTOXICANTS:**

It is a common habit (rather a vice) among most of the mahouts to use opium or any other intoxicant to "treat" a sick elephant. Such intoxicants may suppress the symptoms of sickness in the elephant or may even cure the elephant for time-being, but these are harmful to the elephant in the long run. These intoxicants, besides addicting the animal, also weaken the elephant and make it susceptible to many diseases. Therefore, use of intoxicants for treating the elephants should be strictly prohibited.

## **3. SYMPTOMS OF AN AILING ELEPHANT**

Like an infant an elephant also cannot express its pain and problems through speech. But like a good mother who can feel any thing going wrong with her baby, the mahout should be able to detect any unusual behaviour in his elephant. a mahout should observe his elephant very carefully every now and then and should be able to tell what is normal for it and what is not. Reasons for any abnormal behaviour must be investigated and immediately reported to the superior authorities and the veterinary doctor. Some useful tips for the mahout are given below.

3.1 The mahout must often visit the *pilkhana* in the early hours of the morning to see if his elephant is lying down to sleep. Sleeplessness for many days at a stretch may be the signs of ailment.

3.2 The mahout must keep a watch over the feeding of his elephant. Lesser than the usual intake of food should be viewed with concern.

3.3 He should examine the dung of the elephant carefully. Presence of worms, earth or unusually large quantity of undigested food in the dung is indicative of ill health.

3.4 Eating of earth by the elephant also suggest presence of worms in its stomach or digestive problems or any other ailment.

3.5 a healthy elephant is always active and apparently restless, constantly moving its trunk, tail and legs, flapping its ears, always chewing something. Its eyes are also bright. a dull looking inactive elephant, suggests sickness.

3.6 The gait of the elephant should also be observed carefully. An uneven movement or dragging of feet may be on account of injury, muscular pain, presence of thorn, foot rot etc.

3.7 Appearance of ribs on the body or forehead of elephant is a definite indication of weakness.

3.8 The bathing time of the elephant is also the proper time for physical examination of the elephant. All parts of the elephant's body should be examined carefully to detect injuries, thorns, sores, boils or signs of rot. Different parts of the elephant should be pressed with hand and the response of the elephant should be noted to see whether it feels any pain.

3.9 Periodic measurements of weight and girth of the elephant also helps in monitoring its health, for example, loss of weight in any elephant shows bad health. Unusual increase in the girth of an adult cow elephant within a short span of time may be on account of its pregnancy. a regular record of the history of musth in a bull elephant may help in determining whether or not the unusual behaviour of the elephant is indicative of the approaching bout of musth.

#### **4. TREATMENT OF COMMON INJURIES AND AILMENTS**

Given below are some local cures for common injuries and ailments of elephants as practises in N.E. India. Some of the cures may not look sophisticated or even scientific, but they are time tested and the ingredients involved are within the reach of a mahout.

**4.1 EYE TROUBLES** - Constant watering from the eyes of the elephant may be due to infection, injury to the eye ball, cataract, excessive internal body heat. Eyes of the animal may be washed 3-4

times daily with a weak solution of alum. Water soaked overnight with tobacco leaves is also used for this purpose.

**4.2 BODY ACHE** - Elephant may be given bath with tolerably hot water. Water is poured gently on the ridge of elephant's back and the body is given a massage with hands or sometimes with legs.

**4.3 BACK ACHE** - a hot compress may be given with a gunny bag, soaked in hot water. a little common salt may be added to the water.

**4.4 SWELLING IN THE NAVAL** - Raw [jaggery](#) may be melted and applied over the naval.

**4.5 WOUND** - An elephant may get a wound due to injury or on being hit by the [ankus](#) (driving hook), or *ballam* (spear). The wound should be washed with clean water and dry turmeric powder should be sprinkled over it. When the wound starts drying up, a mixture of turpentine oil, coconut oil and carbolic acid in suitable proportion should be applied on it.

**4.6 INJURY DUE TO ROPES** - In case of a domestic elephant, wound caused by a rope may be treated in the manner explained above. In case of a recently captured wild elephant, the wound should be thoroughly cleaned and a special ointment should be applied on it. This ointment is prepared by collecting earth from a termite mound, boiling it in water and mixing up with turpentine oil. This ointment is also believed to be a painkiller.

**4.7 SORE BACKS AND ABSCESSSES** - An abscess without pus inside, may be treated with hot water compression. In N.E. India, mahouts of also use elephant dung or the root of a wild variety of a plant called "*Kochu*" (*Harum*) for giving hot compression. In case of an abscess with pus inside, a paste of red chilly is first applied to draw the pus to the surface. Next day, the abscess is washed thoroughly and allowed to dry up. a slight layer of mustard oil may be applied to sooth the pain. The pus may come out on its own within a day or two. Otherwise, it may be drained out by making an incision into the abscess, using a sharp disinfected *dao* (cutting knife). The wound is then sprinkled with the dust of the dry bark of pipal tree (*Ficus religiosa*) to help quick-healing and to prevent re-formation of pus.

Treatment of back-sore takes a long time with a working elephant. It is necessary that the elephant is kept off heavy duty or specially designed gears are used so as to avoid pressure on the affected part of the elephant's body. The sore should be washed and wiped dry. a thin layer of coconut oil should be applied on it followed by sprinkling of dusted bark of pipal tree.

**4.8 INSECT BITE** - Painful swellings may be caused on elephants' body due to bites by wasps hornets or other insects. a specially prepared ointment is applied on the affected area to give relief to the animal. The ointment is prepared by boiling buffalo dung and earth from a termite mound together in water and adding turpentine oil when the solution is luke warm.

**4.9 ECZEMA** - The affected part is washed with hot water mixed with boric powder and wiped dry with a a clean piece of cloth. It is then "burnt" with pure carbolic acid. a mixture of turpentine oil , coconut oil and carbolic acid is then applied daily on the wound.

**4.10 FOOT- ROT** - Fungal infection on the heel (called "*Chhajan*") or soles and toes (called "*Karrhi*") of an elephant are invariably due to unhygienic conditions of the *pilkhana* and cause tremendous pain to the animal. In N.E. India, the tissues affected with fungus are burnt with the help of a red hot iron rod. For the next three days, the tissues are also treated with boiling mustard oil mixed with crushed nuts of *Bhela* (washerman's nut ie *Semicarpus anacardium*) and a little blue vitriol (copper sulphate).

Elephants is not allowed to get the affected feet wet. The treatment is repeated if some fungal affected tissues are still left. Otherwise, the wound is treated with the mixture of turpentine oil, coconut oil and carbolic acid till it completely heals up.

**5. CONCLUSION** - As stated earlier, proper food and working conditions coupled with suitable preventive measures would keep an elephant in healthy condition. However, a mahout should be able to provide first aid and primary medication to the elephant. Last but not the least, he should be able to narrate the complete case history of his elephant to the veterinary doctor. This will help the doctor in making correct diagnosis of the ailment and prescribe proper course of treatment for the elephant.

## HEALTH CARE OF DEPARTMENTAL ELEPHANTS

### Dr. V. Krishnamurthy

In Tamilnadu, elephants are maintained in forest department camps, which are located on the forest peripheries. Thus captive elephants live in a semi wild environment and are less prone to serious illnesses, yet, they also become sick or injured now and then. Some of the common health problems observed among camp elephants are discussed below.

#### I. External ailments:

**Injuries** : Physical injuries can occur due to various reasons.

- a. **Accidents:** Elephants may hurt themselves while grazing, by falling into pits, rubbing against rough tree trunks, trees or branches falling on their backs. They may also trip against a root or rock and hurt their legs.
- b. **Fights:** Camp tuskers, may be injured by a wild tusker, while grazing in the forest. They may also get into fights with each other and get hurt in the process.
- c. **Work related:** Timber elephants may get hurt at the work site. Their feet might strike against, or trunk might get crushed underneath heavy logs.

#### II. Ailments of various physiological systems within the body:

**1. Gastrointestinal Problems:** These can be of various types:

- a. **Diet:** Lack of succulents or green fodder in the diet causes severe disorders. Green fodder contains 80-90% water, which is very important for various metabolic activities. During dry season when green fodder is scarce, animals feed on dry twigs, leaves, or branches. These do not have sufficient water content, leading to impaction and colic. Besides, fungal spores

present in dead wood, may cause intestinal disorders. Sudden change in diet will also lead to intestinal disorders. Dietary changes should be made gradually ; for instance, a change of concentrate diet from ragi to tapioca must be attempted over a period of few days, if not, the animal may develop indigestion leading to diarrhoea.

- b. **Flatulence:** Certain varieties of grasses (and concentrate feed) have high saponin content. Saponins arrest gases, during digestion, resulting in their accumulation in caecum of alimentary canal. Gas accumulation is very painful and causes respiratory distress. The condition has to be relived immediately with warm soap water enema, antifatulence drugs, or injections. Asafoetida (or *kaayam*) is also a good local remedy for gas accumulation.
- c. **Hyperactivity shock or stress:** In animals and humans, shock or excitement induces the production of the hormone adrenalin in the body. Adrenaline blocks the activity of the enzymes responsible for digestion and also the peristaltic movement of the alimentary canal. In elephants also, excitement or nervousness can cause indigestion.
- d. **Diarrhoea:** Diarrhoea is a natural mechanism to expel a foreign substances from the body. Presence of irritant in the stomach causes accumulation of fluids, which is removed via excretion. This is diahorrea. Diarrhoea can result from eating mud or stale food. Diarrhoea must be reported immediately to the doctor. Excessive diarrhoea will result in dehydration, leading to coma and finally death of the elephant. Unhygienic food is the normal cause for diahorrea. During public feeding of elephants at the camp, quality of feed is not checked. This also can cause diahorrea.

## 2. Circulatory disorders:

- a. **Heart related ailments:** Elephants subjected to heavy timber work, ie. being forced to drag logs along steep slopes, are likely to suffer from heart failure. These animals must be taken off work and given prolonged, palliative treatment. The symptoms are oedema, or dropsy (accumulation of non-inflammatory fluids), slow gait and inability to climb slopes. In Africa, elephants were found to suffer from 'white heart disorder', a condition arising due to sodium deficiency, in the diet. The soil in their habitat has high potassium content. Thus the diet of elephants is high in potassium salts but deficient in sodium. This causes an electrolytic or salt (sodium and potassium) imbalance in the body, which affects their longevity. Perhaps this is why African elephants have a lesser life span, compared to Asians.
- b. **Blood Parasites:** These are found usually in the blood stream and there are several kinds, such as Filariasis, and Trypanosomiasis. Filariasis causes cutaneous lesions on the skin. Severe itching leads to scratching, and the skin breaks. This itching is caused due to biting flies in the forest areas. Usually nodules are found on the external stomach wall. These nodules bleed when pressed. Preventive measures are to use fly repellent lotions and regular scrub baths.

## 3. Poisoning:

- a. **Contaminated drinking water:** Poisoning occurs from contaminated drinking water. While travelling, elephants must not be allowed to drink from water bodies close to paddy fields. The fields may be sprayed with pesticides and fertilizers, which may drain into water bodies nearby.
- b. **Insecticide poisoning:** Coconut trees are sprayed against pests, in most places. Elephants reject the leaves, since many of the pesticides are strong smelling, but there are some

odourless pesticides and the elephant may be poisoned on eating sprayed leaves. Mahouts must therefore not cut fodder from unfamiliar places.

- c. **Deliberate poisoning:** Elephants have been poisoned deliberately by people, to settle scores either with mahout or elephant owner. In U.K., a case of deliberate poisoning with lead sulphate, has been recorded in a zoo, early in the 1950's. A mahout should not allow strangers to feed the animal. The food must be checked before feeding the elephant.

**4. Parasites:** Elephants are prone to parasitic infections at all ages. Chronic parasitism results in - condition loss, diarrhoea, infection of liver (resulting in hepatitis or cirrhosis and loss of function of liver), and defective digestive system. Periodical deworming has to be carried out and specific, continuous treatment to be given. Parasitic infections are more common among privately owned elephants, as they are not periodically de-wormed.

### **Preventive measures**

- Working elephants develop a callous on their front legs, due to abrasion of the *yakka* (the rope used for dragging logs). Elephants can be trained to drag timber in the correct way, to prevent callouses
- Animals used for joy rides should be given periodical rest.
- Mahouts must not use steep routes during timber hauling, though it may be a shorter route.
- Long tusks should be trimmed, to prevent injuries during fights.
- Excessive use of tusk in timber depots result in dropsy, or oedema. Hence mahouts must not force their elephants to carry weights too often on their tusks.
- Elephants commonly sustain injuries on their legs. While grazing, they may step on bamboo stumps or sharp stones which can get embedded inside the foot. Injuries during elephant capture and training occur more commonly on the legs. Elephants working in slushy areas, and those that have unclean tethering sites, are prone to foot rot. It begins as a crack in the foot and extends up and across the entire foot. The condition is very painful and the animal is unable to walk or rest on its legs. Ill fitting hobbles also cause injuries to the legs. Elephants wear out their foot pad, if marched excessively. It may result in contusion, on the heel. To prevent this, elephants must not be marched on tarred roads., for long distances. They should also not be allowed to walk over sharp stones.
- Injuries must be subjected to immediate veterinary care. Mahouts must clean and dress the wound everyday.
- The veterinary doctor has to ensure that all animals are vaccinated for Anthrax. He has to check the mahout's health also. Mahouts can transmit diseases like tuberculosis and pox to the elephant.

Despite precautions sometimes accidents occur. Calves may be stung by bees & wasps, when they carelessly pull down a branch, bearing a hive. They may also accidentally feed on poisonous plants like nettle and develop rashes and allergies. Elephants may stray into the nearby fields and get shot by villagers. Villagers place home made bombs within tapioca tubers to keep wild boar away. Elephants feed on these tubers by accident and injure themselves.

Caution and foresight will always prevent accidents, diseases and deaths. A good management is always preventative in its policy. In an elephant camp there are several people who are directly and indirectly responsible for the welfare of elephants. Managerial responsibilities have to be distributed

and accepted by those involved. Elephant management involves team work and cooperation from various people involved.

# SECTION III

## MANAGEMENT

**A Traditional Perspective on Elephant Management**  
**Traditional Knowledge on Elephants**  
**Management Practices in Kerala**  
**Elephant Management in Tamil Nadu Forest Department**  
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**Care of Pregnant cow Elephants**  
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### A TRADITIONAL PERSPECTIVE ON ELEPHANT MANAGEMENT

#### Poomulli Neelakanthan Namboothiri Pad

##### Restraining Tools

The restraining tools used commonly by mahouts of Kerala are stick, hook, long pole and knife. A mahout must know the proper usage of these tools. He must be armed with at least a knife while approaching an elephant. This is for personal safety. It is only through observation, imitation and practise that one can learn the correct usage of the tools. A mahout should also know the [\*marmams\*](#) on the elephant's body. Carelessness on the mahout's part can cause irreparable damage to the elephant.

##### Grooming

In Kerala, there exists a practise to occasionally scrub elephants, especially timber elephants, with pumice stone. This acts like a muscle relaxant and also provides better skin tone. It is more common in Southern Kerala. This practise should not be repeated very often because it has negative effects too. If the elephants are scrubbed hard with pumice stone, for an hour continuously, their eyes begin to water. Sub adults in juvenile musth, must not be scrubbed with stone as they become very weak. Elephant that are used to being stone scrubbed frequently, will experience difficulties when this practise is discontinued. They may suffer from impaction. For calves and sub adults, the stone must be used only from below the knee.

Mahouts prod their elephants with the sharp end of the coconut husk, while bathing them. This is to make the elephant obey commands such as move or stretch feet etc. This practise must be discouraged. The mahout may accidentally prod on the *marmam* or sensitive points.

##### Traditional medications

##### Eye Injuries

The following herbal preparation may be prepared and used in case of injuries to the eye or conditions where the eye waters constantly or acquires reddish tinge. The tender leaves of *Ambazham* (*Spondias pinnata*) are ground well and mixed with honey. The elephant is made to lie on its side and this mixture is applied twice a day on the eye, for 4-5 days.

### **Swellings**

Swellings caused at work site or from being attacked by another elephant, can be treated by the following method. Pepper mixed with crystalline salt are placed in a rough cloth or sack and used as a compress on the swelling. Sand is heated in an iron vessel and maintained at a luke warm temperature. The compress is warmed on the sand and placed on the swellings. This treatment provides immediate relief from pain and the swelling will subside. Most often, elephants get injured near the mouth when attacked by a tusker. This makes it difficult for them to eat fodder. The same method can be applied to treat such swellings.

Swellings that have been present on the body for a long time can be treated as follows: Salt is boiled in sesame or gingelly oil and the mixture is applied on the swelling. The above mentioned compress method is carried out. A paste consisting of the skin of *kadukka* (*Terminalia chebula*), *nellikka* (*Emblica officinalis*), *Thannikka* (*Terminalia bellarica*), *shatakoopa*, fried *ellu* (*Sesamum indicum*) and boiled rice, is prepared and mixed with boiled cow's milk, butter or ghee (clarified butter). This mixture is then applied over the swelling.

### **Injuries on sensitive points**

Sesame or gingelly oil is initially applied on the swelling. A finely powdered mixture consisting of *marmani* tablets (available in *Ayurvedic* shops), and egg white is applied over the swelling. This mixture should be applied every six hours.

### **Loss of appetite, de worming and stomach ailments**

A powdered mixture with, equal quantities of *chukku* (dry ginger), *mulaku* (pepper) and *tippali* (*Piper longum*) are administered orally along with rice. The powder can be rolled into a lemon sized ball, for an adult elephant. This medicine helps improve appetite.

*Ashtachoornam* (available in *Ayurvedic* shops), and ghee are mixed with rice and administered orally.

A mixture consisting of fried *Inthuppu* (available in *Ayurvedic* shops), jaggery and asafoetida are pounded and rolled into a lemon sized ball, to be administered with rice. It must be given an hour before the elephant takes a drink of water. This mixture not only improves appetite but also is a de worming agent and also dilates the anal opening during impaction, constipation and other minor intestinal disorders.

### **Energisers**

Rice gruel and milk are excellent energisers. It can be administered to an elephant after a long work session. Tubers of *pal murukku* (*Ipomea paniculata*) and *chittamruth* (*Tinospora cardifolia*) are cut

into small pieces and pounded. The mixture is mixed with melted butter or ghee and honey and made into a fine paste. The paste can be rolled into balls and can be administered orally to the elephant along with rice for 8-10 days. The medicine should be administered before the elephant is given a drink of water.

### **General pointers for mahouts**

**Purchasing elephants:** An elephant has to be thoroughly inspected for vices and defects before buying. Discussed below are some methods of checking an elephant's condition.

The elephant should be able to carry out the following commands and activities:

- Raise trunk and sprinkle water on the back
- Urinate and defecate periodically
- Stand up and lay down, without difficulty.

The elephant should also have certain auspicious signs such as 18-20 nails. The palate must not have dark spots. The tip of trunk must be long, indicating long life span.

### **Precautions at work**

The mahout must check the condition of *vakka* or logging rope. Old ropes must be replaced. Nylon *vakkas* must not be used often. They injure the elephant's mouth. Tuskers must not be allowed to carry extremely heavy logs on their tusks.

During long marches, mahouts must provide drinking water to the elephants at regular intervals. It is also advisable to make bull elephants carry fodder on their tusks. Elephants must be allowed to rest every few hours and allowed to eat the fodder. Carrying fodder on the tusk also acts as a psychological barrier.

## **TRADITIONAL KNOWLEDGE ON ELEPHANTS**

### **Krishnan Kutti Nayar**

#### **Spirituality of a mahout:**

The traditional elephant management system of Kerala had an element of spirituality, about it. In order to be successful, a mahout would have to seek the blessings of his *Ashan* (Master) and Lord Ganesha. The elephant is worshipped in India, because it is considered to be a representation of Lord Ganesha. It is believed that several Gods inhabit elephant's body. Listed below are the names of the various Gods and the position they occupy on the elephant's body.

<b>Body part</b>	<b>Name of God</b>
Forehead	Lord Brahma (Creator of Universe)
Eyes	Lord Adityan (Sun God)
Stomach	Lord Agni (Fire God)

<a href="#"><u>Irikkasthanam</u></a> (riding seat)	Lord Krishna
Neck	Lord Indra (king of heaven)
Ears	Lord Darsh
Feet	Lord Mitra
Joints	Aswini Devas (Celestial physicians)
Mind	Chandran (Moon God)
Heart	Varjanya

### **Approaching an elephant:**

A mahout must always carry his restraining devices, while approaching the elephant. He must be calm and pray to his teacher and favourite God before mounting. The elephant must be approached from the left side and the mahout must command the elephant, to move to his right. If the elephant is co operative and in a favourable mood, it will indicate so by beating its trunk on the ground, urinating and defecating. If not, it will sniff the mahout with its trunk, shake its head or rub its body against a tree. These are signs of protest. In such a case, the elephant should be given commands to sit and lie down, before unchaining, to ensure that the elephant is subservient.

### **[Ezhunnallippu](#) or festival parade:**

Handling elephants for festivals, requires practice and extreme care. Elephants of Kerala are trained at a very early age for *ezhunnallippu*.

- During *ezhunnallippu*, some elephants become restless and agitated due to the strain of standing for long hours in the sun, the noise from the crowd, and presence of other tuskers in the parade. The mahout must be prepared to control the elephant before it decides to bolt.
- A mahout must be aware of the vices and temperament of not only his elephant but also the adjacent elephants, in a parade. Some elephants have a tendency to attack another male standing next to it. There have been several incidents of elephants attacking each other during festivals. While standing next to such an elephant, the mahout must position his elephant in such a way that the two elephants are not standing exactly adjacent to each other. The mahout must make his elephant stand a few paces behind the parade line. This helps in avoiding the first attack and the elephant and mahout will have time to escape.
- Elephants must be hobbled during *ezhunnallippus*. Hobbles act as a physical and psychological restraint on the elephant. Some mahouts consider it unnecessary to hobble their elephant, due to an arrogant assumption that their elephant will not go out of control. A sensible mahout has to hobble his elephant, even though it has a mild temperament and is very docile.
- Mahout must stand close to the elephant holding the tip of the right tusk. The tusk is held at the tip, to avoid the first attack, in case the elephant hits out with its tusk. Holding an elephant's tusk act as a psychological restraint.
- Some elephants are afraid of fire crackers at the *ezhunnallippu*. Such elephants must definitely be hobbled and the mahout must stand close, to reassure and comfort the elephant. elephants may lean closer to the mahout and thus a bond or trust develops, between the mahout and the elephant.

- During *ezhunnallippu* that last for several hours, elephants fall asleep on their feet. The mahout then should wake the elephant only by patting it on its back first or by talking loudly, before holding the tusks. If the mahout abruptly hold the tusk, the elephant may attack the mahout.
- If a mahout wants to lead his elephant across or right in front of another elephant, he must inform the mahouts of the other elephant before doing so. This is to make them alert to watch their elephant, because it may come forwards to attack.
- Mahouts must never punish their elephants in public. The elephant may cause panic among people if it steps aside or turns around to avoid a blow.
- A mahout and elephant must be familiar with the routine of the temple and the *ezhunnallippu*, to avoid confusion.
- It is essential to apply body chains on the elephant during *ezhunnallippu*. One end of the chain goes around the left hind leg and the rest goes around the body. The *ezhunnallippu* accompaniers, who are supposed to sit on elephant back, mount via the right leg.
- A mahout must not punish the elephant when the *ezhunnallippu* accompaniers, are seated on top.
- A mahout must ensure that the elephant stays still, while the *thalekettu*, (the head gear or decoration) is being tied. The mahout seated on top, is in a very precarious position, while tying the *thalekettu* and may topple over if the elephant does not stay still.

### ***Ketti-azhikkal* or breaking:**

In Kerala there is a practice called *ketti-azhikkal* which is carried out when a new mahout is assigned to an elephant, in the absence of its old one. The mahouts use various methods, especially the [\*valiya kol\*](#) or long stick to bring the elephant under their control. *Ketti-azhikkal* is literally a battle between the mahouts and the elephant. The elephant in the end, succumbs to the torture by the mahouts. Several elephants have died or been severely mutilated during the process. *Ketti-azhikkal* is also done while unchaining the elephant after musth. An elephant, after its musth period, does not accept its mahout easily. This is due to the fact that while in musth there is very little contact between the mahout and elephant. Thus the degree of control the mahout has over the elephant, diminishes. Hence the mahout has to re-establish his control over the elephant after its musth and he may have to perform another *ketti-azhikkal*.

*Ketti-azhikkal* is criticised very much through out the state and condemned, by the mahouts themselves. In the present scenario of Kerala, it has how ever, become inevitable. Mahouts change their jobs from one elephant to another, very often. Elephants are also changed hands frequently between owners. Thus the time a mahout spends with one elephant and vice versa, is very short. Therefore there is very little bonding between the elephant and mahout. The mahouts are thus forced to control the elephant by harsh methods.

During *Ketti-azhikkal*, one of the front feet and the diametrically opposite hind feet are chained. Two or more mahouts approach the elephant. These mahouts agitate the animal and induce it to attack or chase them, while still tethered onto the chain. The mahout who intends to be the actual mahout, gives verbal commands to the elephant. The elephant disobeys and so the mahouts use the long pole or short stick on the elephant. This process is continued until the elephant becomes exhausted. Gradually the elephant stops resisting and begins to obey the commands. There are however some unspoken rules about *kett I-azhikkal*, which is that the mahout must not attack the

elephant stealthily i.e. the elephant must be able to see or feel the blow from the pole, coming. The elephant must be allowed to fight back or resist as much as it can. It is improper to attack the elephant on its sensitive points, as it will cause permanent damage and tremendous pain.

If the mahouts are convinced that the elephant is submissive, they should command the elephant to lie down. They should approach the elephant with caution. One mahout may mount the elephant, while the other stays on the ground. The elephant is thus taken for a walk and tethered at a new site. The mahouts must be wary of the elephant for at least a month after *ketti-azhikkal*. It is also safer if both mahouts handle the elephant together.

### **Musth:**

A healthy elephant goes into musth after 15 years of age. During this growing period, mahouts have to handle their elephant carefully. The training or handling during juvenile musth, moulds the elephant's character. The elephant will continue to show the same characters in adulthood also. Mahouts must be careful that the elephant does not turn too aggressive or into a killer, during its juvenile musth. Some of the symptoms shown at the early stages of musth are listed below.

- Quick response to commands, i.e. quick movements
- Frequent sniffing of mahout and people with trunk
- Swift changes in moods and behaviour
- Fixed gaze. Elephants stare at objects for a long time.
- Saliva dribbles constantly from the trunk.
- Eyes appear bright and red
- Elephants dig around the tethering area
- During a scrub bath, dirt comes off easily
- Temporal region swells up
- Urine dribbles constantly

A few elephants go into musth twice, in a year. This reduces the work utility of the animal. To prevent the recurrence of musth, elephants are subjected to intense physical activity, such as logging. Physical exertion and strain delays the onset of musth.

Herbal preparations can be administered to the elephant, to induce musth.

1kg each of *amukkuram* (*Withania somnifera*), gingelly seed (*Sesamum indicum*) black gram (*Phaseolus mungo*), *thippali* (*Piper longum*) and 250 gms each of *vayalchulli* seeds (*Astercantha longifolia*) and *naykornam* seed (*Mucana prurita*) are powdered together. An equal quantity of jaggery is melted and mixed with the prepared powder. The entire mixture is rolled into smaller lemon sized balls and dipped in honey. One such ball can be administered to the elephant every day along with rice, a few weeks before the expected musth period.

3 kgs of raw rice with 1<sup>1</sup>/<sub>2</sub> kgs of black gram (*Phaseolus mungo*), and green gram (*Phaseolus aureus*) can be made into a gruel. This gruel, mixed with 3 litres of cow's milk can be administered to the elephant every morning around the musth period to induce musth.

During musth, elephants must be given special foods like, cucumber or curds mixed with rice, to lower their internal temperature.

### **Herbal remedies for minor ailments:**

Mahouts must know a few herbal medicines to treat minor ailments in his elephant. These medicines are all time tested and completely harmless.

#### **1. To improve digestion:**

Juice obtained from the stalk of lotus flower, is boiled with sesame seeds (*Sesamum indicum*). This mixture can be administered along with rice every day for improved digestion.

#### **2. Eye ailments:**

**a. Eye itches:** *Thriphala* (an *Ayurvedic* medicine), may be mixed with honey and applied on the eyes to reduce or stop itching of the eyes.

**b. Opacity, Watering of eyes:** Tender buds of *ambazham* (*Spondias pinnata*), can be mashed in honey. The mixture can be poured into the corners of the eye, using a thin cloth. The cloth filters out the granular substances in the mixture. This medicine can be used to treat opacity or watering eyes. It can also be used when the elephant is unable to open its eyes due to injuries.

#### **3. Injuries and wounds:**

Elephants may get injured by the use of restraining devices or by accidents. Buffalo dung can be boiled in water, until it becomes thick in consistency. One of the following plants *odichutti*, *nochi* and *nelli* may be used as a brush. In the absence of these plants any other spraying or sprinkling device can be used. The brush is dipped into the mixture and sprayed onto the injured region with considerable force.

#### **4. Swellings:**

Equal quantities of salt and pepper are powdered and heated in *ghee* (melted butter) or gingelly oil. The mixture is allowed to cool to a lukewarm temperature before applying on the swelling.

Snake gourd juice along with *inthuppu* (*Ayurvedic* medicine) are boiled and cooled to be applied on the swelling.

#### **5. Colic:**

Fried crystalline salt diminishes the effects of colic in a remarkable manner. Salt makes the animal thirsty and consequently it drinks a lot of water. During colic it is very essential to prevent dehydration as it may worsen the condition. Salt can be mixed with concentrate feed or water to be administered to the elephant. Salt must be administered during the day. The quantity of salt to be used should depend on the elephant's size. An average adult elephant between (7-9 feet) may be given 100 gms of salt per day.

The bark of *madakka* tree, a pinch of salt and a few flowers of *thumba* (*Leucas aspera*) can be fried on fire. The mixture can be administered along with rice, during colic.

## MANAGEMENT PRACTICES IN KERALA

**Dr. Jacob. V. Cheeran**

### **Feeding:**

Mature elephants feed continuously for a considerable length of time. In Kerala, the main cut fodder in captivity is palm and coconut leaves. Working animals are fed with concentrates consisting of grains, millet and pulses. Common salt should also be added. Elephant's capacity to digest food is poor and only 40% is digested and the rest (60%) is passed out as faeces. The standard practice is to supply fodder at the rate of 5% of the body weight. So a cow elephant will need 150-175 kg of fodder and a bull will need 200-275 kg of fodder. The growing calves, pregnant and lactating cows may take more food. The concentrate can be powdered and cooked depending on its nature. This will help in better digestion and assimilation of food given. Horse gram, rag, salt (100 gm) and jaggery are common ingredients of the concentrate. Ordinarily 12-15 kgs of the concentrate are fed everyday. On rest days concentrate ration is reduced. It has been found from practice in Kerala that, if sufficient greens are available, the concentrate is unnecessary, unless the animal is put to heavy work, like timber hauling.

### **Restraining devices:**

Elephants are not ordinarily let loose but tethered to a tree or a strong pole made of iron or concrete. Usually only one hind limb is tethered with one chain. During musth, special heavy chains are used. The forelimb also is tethered to the front. This will help to clean the hind portion. When the animal is not taken out regularly in musth, the chain of the hind limb is alternated. The chain that is tied is released only after one chain has been put on to the other hind limb. During musth, special heavy chains (musth chains) are used and both the alternate fore and hind limbs are tied. i.e. the right hind limb and the left forelimb. Chains should be of the following sizes. ½", 5/8" and 3/4" in thickness. Both fore and hind limbs can be hobbled with one chain. Another chain called the cross chain, is tied between the chains of the fore and hind limb. The chains should have special locking devices at various lengths so that it can be shortened and lengthened depending upon the requirement.

Another chain known as the body chain goes around the body and is tied to the hind limb. If an animal misbehaves, the rider can easily release the chain and push it down into the ground. This will act as a trailing chain and can be tethered on a tree or strong pillar. A trailing chain is always used when the mahout is not sure about the temperament of the animal.

A double rope is used around the neck and this is useful when the animal is being ridden. The mahout can put his feet through the rope to keep his feet in position and can also give toe commands. Ordinarily a rope with a length of 625 cms and 2 ½ - 3 cms in diameter is used for this purpose.

Elephant hooks are of different sizes and shapes. In Kerala it is made up of wood like teak, 100-125 cms long and the hook is made of brass, with a rounded prod at the tip. But in many other parts of

the country, it is short, with a large hook, and made of iron. Mahout will also carry a big knife as well as a stick, of one meter length made from the branches of tree which is flexible and tough.

A long rod made of hard wood of 3-3 ½ meter long is used to prod the elephant from a distance. This is also used to punish or control the elephant, by placing it against the back of the ear. The animals are trained to remain in the same place and not push the rod down. This is also a test of obedience.

All of this restraining instruments must be used, very sparsely only. The knife is used very sparingly. It is often used to cut down the fodder and to dress it

### **Tethering site:**

The tethering site should have shade and proximity to water. Surface should not be too hard and must be preferably muddy. There should be provision for drainage and convenience to dispose dung, urine and fodder refuse. These wastes also can be incinerated periodically.

## **ELEPHANT MANAGEMENT IN TAMIL NADU FOREST DEPARTMENT**

### **Dr. V. Krishnamurthy**

Tamilnadu Forest Department owns 2 elephant camps, one at Topslip, Anamalais and the other at Mudumalai. Departmental elephants were used extensively for timber extraction and hauling until a few years ago. This activity has been reduced to a large extent these days, following the ban by the Indian Government, on tree felling. Now the departmental elephants are used for tourist rides, safaris and shows. They also work in the departmental plantations occasionally.

### **Camp routine**

Elephant are usually released overnight into the forests for grazing. A long trailing chain is fastened on the hind leg and a bell is tied around the neck. Next morning, the mahouts fetch their elephants from the forests. Mahouts follow the trail of their respective elephant and can easily determine their location from the tinkling of bells. The elephants are brought back to the camp to be washed and fed. They assemble in front of the kitchen quarters for their daily ration or concentrate feed. A forest officer is present during the feed time. After the feed, mahouts and elephants proceed to their respective work sites. The departmental rules permit the elephant to be worked for only six hours in a day, i.e. 8 -11 AM and 2-5 PM. Mahouts and elephants rest for a few hours in the afternoon, before proceeding for work. Elephants are scrubbed and released into the forests once again, at the end of the day. Elephant that are used for pleasure rides, work for only 1 - 1½ hours in the morning and afternoon.

### **Veterinary care**

A veterinary surgeon are appointed in - charge of elephants. The veterinary officer decides the feed quantity and work load of every elephant, based on its size and age.

### **Camp sites**

A two month rest period is available for elephants during the months of March and April. This is the dry season and fodder is usually scarce in the forest. During this period, the camp is shifted temporarily to an alternate site with sufficient fodder and water. This change of camps allows the vegetation to regenerate in the previous camp.

Before deciding a camp site, the following points must be considered.

- Availability of sufficient water
- Availability of forest lands rich with elephant fodder
- Accessible and safe terrain
- Safe from wild elephants
- Proximity to work site

### **Education and Publicity**

The two camps are open to the general public. The Tamil nadu Forest Department has developed an educational package at Mudumalai camp, for tourists. Video shows explaining the plight of elephants in the wild, efforts being taken for their conservation and elephant shows are all part of the package. The shows keep the elephants fit and occupied. The programme not only educates and entertains the public, but also generates sufficient income, which can sustain the camp expenses.

## **ELEPHANTS IN CAPTIVITY: SOME EXPERIENCES FROM NORTH BENGAL**

**S.S. Bist**

### **1. INTRODUCTION**

In the northern part of West Bengal (Commonly referred to as North Bengal), the Forest Department has been maintaining captive elephants for over a century. At present, there are about 50 elephants (including calves) with the Forest Department, mostly in Jaldapara Sanctuary, with some in Gorumara National Park and Buxa Tiger Reserve. These elephants have either been caught from the wild, born in captivity, purchased from Sonapur or some other elephant fair.

These elephants are used for the following purposes:

1. Patrolling by the forest staff.
2. Carrying tourists to the sanctuaries and national parks for watching wildlife.
3. Conducting census of wild animals and monitoring particular wild animal if needed.
4. Controlling wild animals straying outside & helping in capturing them, if required.

Elephants are not used for timber-hauling in North Bengal, notwithstanding a successful trial in Buxa Tiger Reserve in 1995. There are, at present, only two privately owned elephants in North Bengal.

### **2. TRAINING OF MAHOUTS**

There is no formal system of training of mahouts. Quite often, it is a simple family matter -- a mahout teaching his son whatever he knows about elephants. An outsider, however, has to start his career as a daily waged labourer, helping the mahout and the grass-cutter with various chores. Gradually, he becomes a grass-cutter and spends a lot of time in learning the tricks of the trade from his mahout, or from other mahouts. Finally he becomes a mahout whenever there is a vacancy, and automatically assumes the role of trainer for other grass-cutters and labourers. So the cycle continues. In this way a mahout learns good as well as bad points of his teacher or teachers, as the case may be. There are many standing orders issued by the authorities from time to time regarding the use of elephant and its care, but these orders are often flouted because the mahout finds it difficult to change his habit grown over the years. Supervising officers, therefore, have to play an important role in the overall management of elephants.

### **3. COMMON AILMENTS OF CAPTIVE ELEPHANTS**

Eye inflammation, foot rot (locally called "*Karrhi*" and "*Chhajan*") and back-sore are the most common ailments noticed in the captive elephants. Problems relating to eye and foot are not seen in wild elephants. These are in fact, characteristics of the captive animals living in unhygienic conditions. A great emphasis is, therefore, given on cleanliness in *pilkhana*s (elephant stables). Mahouts, grass-cutters and other forest staff living near a *pilkhana* are also discouraged from rearing livestock, to reduce the chances of spread of cattle-borne diseases among captive elephants.

Back-sore in captive elephants is mostly because of ill designed gears and uneven distribution of load on the elephant. With a little precaution, this problem can be avoided and the working life of captive elephants can be greatly enhanced.

### **4. PREGNANCY IN CAPTIVE ELEPHANTS**

Strange as it may appear, pregnancy in captive cow elephants has always been noted to be caused by wild bulls rather than by captive bulls despite better opportunities available to the latter. Many experts believe that working bull elephants lose their potency. There are others who believe that captive cow elephants show a distinct partiality for wild bulls. The fact remains that at any given point of time, there are many captive elephants who are either pregnant or have recently delivered calves.

It is believed that gestation period for a female calf is 17-18 months and that for male calf is 21-22 months. Standing orders provide that a pregnant elephant should perform its normal work during the first six months. It should be given very light duties for the next six months. During the 13th to 15th months of pregnancy, it should be given no other duty except carry its own fodder. Its "*Peti*" (belly-belt) should also not be used. Thereafter, until the delivery, the elephant should be given full rest and also a special nutritious diet. The rest and the special diet should continue till the calf is six months old. The elephant can, thereafter, be gradually put to its normal duties. Calf is weaned at age of 18-24 months when it attains a height of 4 feet or above.

Obviously, rest and light duties for the pregnant elephant means a comfortable time for a mahout. Therefore, he makes no attempt or only a half hearted attempt to chase away a wild bull paying visit to the cow elephant in his charge. But pregnancy of a captive elephant is very costly to the forest department in terms of the expenditure and the working hours lost -- a mahout must realise it.

Standing orders regarding care of pregnant elephants are useful, but they can be properly followed only if the pregnancy is detected in time. Unfortunately, this is not always the case. There is the example of the elephant Matangini of Jaldapara Sanctuary, who was being engaged for normal duties till about a week before the delivery of its calf in August 1991. The result was a sick and weak mother with no milk to feed to its calf. The mother died within a few months survived by an ever-ailing and ill-grown calf. There have also been the cases when a mahout wrongly claimed that his elephant was pregnant, availed himself and his elephant of all the prescribed facilities and put the entire blame on the elephant when it "failed" to deliver even after the due date was long over. Fortunately, such cases are not common.

There is yet another noteworthy case of a young cow elephant Anusuya of Jaldapara, which calved twice in 1991 and 1993 -but trampled its calf to death shortly after the birth on both the occasions. The elephant had since long been posted in a remote area away from the company of other cow elephants. It is believed that the reason for its abnormal behaviour is the psychological fear arising out of its inexperience with calves. It has been recommended that the elephant should be kept in a big *pilkhana* where it should be able to witness other cow elephants delivering and rearing their calves.

## **5. PECULIAR BEHAVIOUR IN CAPTIVE ELEPHANTS**

A careful observation of the behaviour of captive elephants over a period of time is enough to indicate that like human beings, each elephant has its own personality, I.Q., moods, likes, dislikes and perhaps also a philosophy to look at life.

There is the example of the saintly Jatra Prasad, a tusker, who remains cool even while in musth and does not respond to overtures from its female companions. The cow elephant Chanchal Payari could not resist the call of a wild bull and would escape to forests whenever it got an opportunity, its favourite moment being the bathing time. It died after one such escapade in 1994. The tusker Lal Bahadur, despite its enormous size and big tusks, continues to be a timid and nervous elephant. It remains close to the forest camps for fear of wild elephants whenever it escapes to forests (which it does almost every year). The tusker Rajkant is mortally afraid of buffaloes. There are some elephants who would not get on to a truck, come what may. There are some others who will not take a particular fodder.

Elephants in a *pilkhana* are also known to have a strong liking or disliking for a particular elephant and would express their feelings by sounds of greeting or signs of aggression. Experience also tells that captive born bull elephants usually do not have a fear of the human beings including their own mahout and grass-cutter and may be difficult to handle. A mahout must understand the psychology of his elephant and also the other elephants of the *pilkhana*. This will help him in managing his elephant properly and also in getting maximum output from him.

## **7. SIGNS OF INAUSPICIOUS ELEPHANTS**

Elephants of Jaldapara offer a unique opportunity for testing various theories regarding the so-called inauspicious elephants. There are elephants with 16 or 17 toes, elephants with cat eyes, elephants with black under-tongue, elephants with torn ear-lobes and elephants with whatever is believed to be an inauspicious sign. There are also elephants with apparently auspicious signs. There are

sufficient number of exceptions under each category to raise doubts about the reliability of such theories. What can not be doubted, however, is that well trained and well-kept elephants under the charge of knowledgeable and caring mahouts are always the best of the lot. Instances of a very good elephant getting spoiled under the charge of an indifferent or ill-trained mahout are aplenty.

## **8. INTER-RELATIONSHIP WITH WILD ELEPHANTS**

Wild elephants -- usually solitary bulls, often visit *pilkhanas*, either for a date with a cow elephant or for sharing fodder with their captive brethren. Cases of wild bulls assaulting a captive elephant (usually bulls) and injuring them seriously are common. Captive elephants, who are usually tied with chains and hobbles, can not protect themselves. If one believes the stories given by some mahouts, most of these attacks are for a "revenge". There is the famous case of the departmental tusker Shibji in the late sixties, who was constantly pursued by a particular wild bull for a number of days even when it was sent to different *pilkhanas*, and was finally killed. The story goes that the wild elephant in question was an escapee from an elephant capturing operation in which Shibji was used as a *koonkie*. The wild elephant allegedly bore a grudge against Shibji and killed it when the opportunity came.

Quite often, during a raid by wild elephants on a *pilkhana*, a captive elephant may break free from its chains and escape to the forest -- alone or with the wild elephants. To trace the elephant and recapture it poses considerable difficulties. Experience suggests that captive bulls are not welcome among their wild brethren, while the captive cow elephants may soon join some herd or the other. At least two captive cow elephants, Lady Marie in the fifties and Champakali in the early eighties, are known to have joined wild elephant herds in North Bengal.

Whatever be the case, it is the duty of the mahout and the grass-cutter to protect their elephant. In North Bengal, wild elephants are kept away from *pilkhana* with the help of crackers and search-lights. Elephant-proof trenches and electric fencings are also used to protect big *pilkhanas*.

## **9. RELATIONSHIP OF ELEPHANT WITH ITS KEEPERS**

An elephant spends most of its time with its mahout or grass-cutter. It depends on them for its food and other needs. It takes its orders from its mahout and grass-cutter for executing various works. It is, therefore, understandable that the elephant should have some affinity with its keepers. In fact, some elephants become so used to receiving orders from a particular mahout that other mahouts may find it very difficult to manage it.

However, in a large number of cases, it is seen that an elephant likes its grass-cutter more than its mahout. In some cases, particularly during musth, elephants have been seen to display their disliking for their mahouts through violent behaviour. Cases of elephants killing their mahouts are also on record. It is generally believed that mahouts involved in all such cases, confined themselves mostly in governing the elephant, always shouting orders and goading the elephant into following the same, thus earning a disliking from the elephant. In contrast, the grass cutter mostly feeds the elephant, bathes it and nurses it whenever needed -- thus earning its goodwill. It is, therefore, suggested that while the mahout must be firm in handling his elephant and making him follow his instructions, he should be equally kind to his elephant and must take care of his requirements regarding food, water, rest and working conditions.

## **10. SOME BAD PRACTICES**

Many mahouts and grass-cutters have the habit of using their elephants to uproot grasses for collection of fodder. It saves them the trouble of cutting fodder themselves. But it is a harmful practice in as much as it leads to the depletion of fodder resources in the forest. Moreover, for the elephant who is probably already tired after a hard duty in the morning, it means extra work and a strain on his health. Standing orders of the forest department do not allow this practice.

Patrolling duties in national parks and sanctuaries can often be very gruelling for a captive elephant - involving long march at odd hours. The standing orders prohibit duty by elephants for more than 6 hours in a day, either in a single shift in morning or in two shifts - one in the morning and other in the late afternoon. But the duty hours are often exceeded either due to negligence of the mahout or lack of planning by the accompanying forest staff. Quite often, the elephant, after a night-march, is not provided with adequate rest and food before the next round of duty. The feeding hours of the patrolling elephants are also not regular. Therefore, it is not unusual to find patrolling elephants weak and sick.

Tourist duty is considered to be a rather light work, involving fewer hours of duty and a fixed daily routine. Many mahouts, in their zeal to oblige tourists with a closer view or a photograph (in consideration for a reward of course), chase wild animals (usually a Rhino or Gaur) and take their elephants dangerously close to them. The standing orders discourage this practice because it often irritates the wild animals. Incidences of rhinos having charged at the elephant inflicting serious injuries are on record.

The mahouts in North Bengal are not particularly fond of bull elephants and support many misgivings about them. The worst practice adopted by many a mahout is to give opium or any other intoxicant to a bull elephant to "keep it under control". This practice is also adopted to suppress "muth" in a bull elephant. The experience tells that elephants used to opium and other intoxicants are quite unpredictable and fall easy prey to diseases and do not live long.

## **11. Qualities of a Good Mahout**

Elephant is a big and intelligent animal. Taking care of such an animal is itself a strenuous job and also needs a lot of understanding and thinking on the part of a mahout. The daily routine of a mahout of a working elephant is also very demanding. Therefore, a good mahout must possess a good health and should pay attention to his as well as his elephant's hygiene. Mahouts given to heavy drinking or other kinds of addiction, seldom make a good mahout. In fact, many cases of drunk mahouts having lost their life or injured themselves seriously after a fall from their elephant, are on record. In North Bengal, a good mahout is one who keeps his elephant well. Fortunately in the recent years, there has been a distinct improvement in the professionalism among the mahouts of the Forest Department and they have become much more conscious about the well-being of their elephants. The following factors have contributed to this improvement:

1. Frequent interaction of mahouts with elephant experts and scientists and participation in such operations as tranquillising, capturing and radio-collaring of wild animals which call for considerable skill on the part of the mahouts.

2. The realisation that the market prices of working elephants are sky-rocketing and in case of loss of an elephant, replacement may be a difficult proposition.
3. Interest shown by the senior forest officers in improving the conditions of the elephants and their mahouts and grass-cutters.

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## ELEPHANT MANAGEMENT IN KERALA FOREST DEPARTMENT

### Dr. Mohan Das

The Kerala Forest Department currently owns 20 elephants in various elephant camps around the State. There are 7 elephant camps in Kerala and they are at Konni, Aryamkavu, Thekkady, Kodanadu, Nilambur, Muthanga and Tholpetti. Elephant management in the various elephant camps is based on a standard guideline and management system enforced by the Kerala Forest Department.

**Diet :** Elephants are divided into 5 classes based on their height and dietary requirements.

Class	Height (cms)	Rest diet	Working diet	Cut fodder (Palm leaves)
Class - I	Above 244	Wheat - 4kg, Ragi-6kgs, Horse gram 4kg, <i>karipatti</i> or raw sugar -100 gm	Ragi 6 kg, Horse gram 2 kg, Salt 200 gm	20 branches of 25 kg
Class - II	Above 213	-- do --	-- do --	18 branches of 25 kg
Class - III	Above 183	-- do --	-- do --	16 branches of 25 kg
Class - IV	Below 183 and above 150	-- do --	-- do --	14 branches of 25 kg
Class - V	Below 150	-- do --	-- do --	few branches

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Elephants above 60 years of age are retired from work and their diet consists of wheat-3kg, ragi-3kg, Horse gram-nil, salt-200gms, *karipatti* (a variety of jaggery)-100 gms.

### Special diet:

The forest veterinary officer is authorised to prescribe a special diet for ailing elephants, bulls in musth and pregnant cows etc. Mahouts are not allowed to cut fodder from outside but they do so in cases of sickness or musth when the elephant may require more food.

The concentrate feed is prepared within the camp and the official feeding timings are 8 am and 6 pm. The cut fodder system is practised in areas where the elephants cannot be let out to graze in the forest. If forest areas are available around the camp site, the elephants are allowed to graze in the forest. A long, trailing chain is tied to their hind leg and a bell is tied around their necks before

being released into the forest for grazing. The next morning the mahouts go in to the forest to bring the elephants back.

### **Work schedule:**

According to the guidelines of the forest department, elephants are allowed to work for 6 hours a day. The schedule is adjusted according to the climate and temperature.

08.00 - 11.00 Hours & 15.00 -18.00 Hours - on normal days

07.00 - 10.00 Hours & 16.00 - 19.00 Hours - on hot days.

Elephants do not work in the month of April or May or on weekends and State/National Holidays.

### **Health care:**

The Forest Veterinary Officers (FVO) recommend the use of deccamilli oil as a preventative medicine for foot rot. It is also a good insect repellent. Castor oil must be applied on the chains to prevent chain sores. Elephants need physical exercise and have to be marched a certain distance everyday, depending on their size. The FVO decides the length of a march for each elephant. Each elephant has two mahouts irrespective of its size or age.

## **CARE OF PREGNANT COW ELEPHANTS**

### **Dr. V. Krishnamurthy**

Wild tuskers mate with cow elephants belonging to the forest department. Mating takes place among the camp elephants also. Most often, mating takes place in forests, when the elephants are let out to graze. If the mating has not been witnessed and recorded, by either the mahouts or camp officials, it is impossible to know, if an elephant is pregnant or not.

### **Detecting pregnancy**

The mahout is certainly the first to detect pregnancy. If he suspected mating to have taken place, he could look for the following signs:

1. Scars or marks of the male's feet, on the cow elephant's back
2. Remnants of seminal fluid, along the insides of thighs, and at the vulva

The mating lasts for several days. During this period, the elephants stay close to each other and mate repeatedly. If a cow and bull were spending considerable time together, then it can be assumed that mating has taken place.

If all of the above signs have been noted, it is likely that the cow would get pregnant and the approximate date of delivery can be predicted. The gestation period in elephants ranges from 20-22 months. Cow - elephants mature from 13 years onwards and can deliver any time, after maturity. However, there are exceptions to the rule.

## **Physical changes:**

The first physical signs of pregnancy begin to manifest from the first month.

1. Cows delivering for the first time, will show an enlargement of breasts. This is not so obvious for those that have delivered before.
2. Gait becomes slower and hence quality of work also decreases.
3. A viscous fluid oozes out when the breasts are squeezed.
4. Breasts tilt laterally
5. During the 13th month, it is possible to feel the foetus kicking inside the womb, from outside (quickening). This can be checked when the elephant is being given her scrub bath.

## **Care during and after pregnancy:**

1. The cow should not be allowed to work, after the 13th month, until the calf is born and 6 months of age.
2. The quantity of ration or concentrates is raised. A special diet consisting of vitamins, minerals, soaked green grams and coconuts are provided. 6 -10 coconuts per day are provided before and 8-10 coconuts after delivery. Coconut milk contains several nutritious materials and enhances the quality of mother's milk.

In the wild, pregnant and lactating elephants, feed on the bark of certain tree species, especially during dry season. The bark of these trees are rich in nutritive value.

## **CARE OF ELEPHANT CALVES**

### **Dr. V. Krishnamurthy**

An elephant calf in the wild is orphaned due to several reasons.

1. If the mother of a calf dies, it will be rejected by other lactating mothers of the herd. So the entire herd may abandon the calf.
2. Sometimes mothers reject their calves which is more likely in captivity
3. When the entire herd is hurrying away from some danger, a calf may trail behind and get lost.
4. Calves sometimes fall into old pits and are abandoned by the herd.
5. Calves also follow buffalo herds, that come into the forest to graze. Thus they become separated from their own herd.

## **Hand rearing elephant calves**

### **I. Monitoring**

Abandoned elephant calves are brought into the elephant camp or zoo by villagers. Raising orphaned calves is very challenging and success is not ensured all of the time. Tamilnadu forest department camps have occasionally received orphaned calves and have had moderate success, in raising many of them. Over the years, they have understood the 'do's' and 'don'ts' with regards to

rearing orphaned calves. This knowledge coupled with observations made from the growth pattern, dietary requirements, and habits of other calves with their mothers, can be applied to rearing orphaned calves.

Villagers or people who find the calf, normally over feed it, with a variety of food like bananas, fruits, and vegetables. This may upset the calf's digestion. Therefore it is safer to underfeed the calf, during the first few days of its arrival at the camp.

The calf has to be checked for general health condition, injuries or sprains, from falling into the pit. Calves below one month of age retain their umbilical cord. These may be infested with maggots and have to be treated. The colour of such young calves is normally light, the eyes are red in colour, and they always hang their head.

It is important to develop a strict feeding routine or feed chart for the calf, as soon as it is bought into the camp. Several points have to be followed to ensure a safe and healthy diet.

1. The animal must always be given fresh food.
2. The environment where food is prepared must be clean. Cooking vessels used, must be sterilised before use.
3. The food (especially milk), in the early stages, must be given at the calf's body temperature.

## **II. Diet of elephant calves**

**1. Initial diet:** For the first 45 days, after arrival, it is advisable to feed only milk. Milk powder ie. Amul Spray, (baby food, available in the market) may be used instead of milk, as it is rich in iron contents. Milk powder can also be stored for long periods and can be prepared afresh before every feed. Goat's milk is an alternate or substitute to milk powder, but it is difficult to obtain in sufficient quantities of the same. Cow's milk is not advisable for calves, since it (contains large fat globules and) causes diarrhoea. Cow's milk available commercially from market, is not safe as it may be adulterated.

**2. Mode of feeding:** The milk can be fed using an enema can. Enema can offers the following advantages when compared to bottle feeding.

1. The flow of milk can be regulated
2. The flow is smooth and uninterrupted
3. Easy to clean and store.

Bottle feeding can be time consuming as each bottle has to be changed or refilled and the calf may get impatient. It may pull too hard at the nipple on the bottle, if one is not careful.

**3. Frequency of feed:** Normally up to 2 months, calves suckle their mother every 60-90 minutes. During each feed they consume at least 1 lit of milk. The same pattern can be applied to hand reared calves. Calf should cry out when hungry. It is a sign of appetite and also progress in health. It can be fed regularly between 5 AM and 10 PM.

**4. Concentration of feed:** Studies have shown that concentration of mother's milk (ie of cow elephants), varies as the calf grows older. The first few days after delivery, the elephant milk contains colostrum, essential for the calves to develop immunity. It is therefore essential to duplicate the function of colostrum with artificially prepared milk. In a zoo condition, it is possible to draw the milk out of the mother which has rejected its calf and administer this milk to the calf.

Initially, the concentration of the milk powder must be very low (ie highly diluted with water). For the first week, the feed should contain 50 gms of milk powder in 1 litre of water. This can be continued and later the concentration of powder can be increased. If the calf is feeding well, it will manifest signs of health such as urination 10-12 times a day and faecal excretion twice a day. The dung may be semisolid and slightly yellow in colour. A healthy calf will rest between feeds.

**5. Concentrate foods:** After 2 months, the calf can be introduced to semisolid foods like cereals, rice, tapioca ragi etc. Ragi has to be processed properly. Dirt and stones have to be removed by winnowing and the ragi soaked in water for 4-5 hours. The soaked ragi is then suspended in a moist sack and allowed to sprout. The sprouts are dried in the sun, fried in a pan and powdered finely. For adults, the powdering does not have to be very fine. The processed ragi has to be stored in a dry place, to prevent fungal attack. Ragi is an excellent concentrate feed, as it has a balanced calcium and phosphorus ratio.

A well nourished calf is very active. Hand reared calves generally have a slow growth rate when compared to calves raised by their mothers. After 6 months, the calf can be introduced to solid foods. The milk intake can be reduced to 1 - 1/2 litres/day until the 1st year.

**6. Green fodder :** Calves have a tendency to eat mud. They should be discouraged from doing so, until three to four months of age. Calves in a herd, imitate feeding habits of their mother or other adults of the herd. Around the 2nd or the 3rd month, they eat their mother's fresh dung, which encourages the growth of bacterial flora in the intestine. This helps in digestion of green fodder, which the calf may begin eating soon. The hand reared calf is given a similar stimulant. Fresh dung of one of the healthy cow-elephants from the camp is collected, diluted in water, filtered and administered to the calf.

Around 8-9 months of age, calves consume 30-40 kg of fodder per day. They sometimes suffer from lack of appetite. Carminative mixture concentrate (which has to be stocked adequately in the camp), can be mixed with the feed, to help digestion. 500 gms of glucose, vitamins and calcium tablets can also be administered, along with the feed.

Calves have to be weighed and measured regularly. Healthy calf weighs between 80-100 kgs at birth. They gain at least 2 inches in height every year

### **III. Tethering area**

Calves must be kept in a clean and dry (preferably cemented) place. Foreign substances like plastic, paper, rubber must be removed as calves, eat them. Gunny bags must be provided to sleep on, in the night. During winter, the calf requires warmth and so they can be housed in the cooking shed, where the stove can be lit, to provide warmth. In Mudumalai elephant camp, the mahout's family also sleeps in the shed, along with the calf, so that it feels protected.

#### **IV. Weaning and training of calves**

Calves are weaned usually at the age of 15-18 months. Previously they were weaned when they are 2 years old. Early weaning is done these days, so that the mother can be put to work earlier and it has to be noted that, this early separation does not affect the growth of the child. The weaned calf is put in the *kraal*, and the *kavady* (assistant mahout), of the mother or cow elephant, is in charge of the calf.

During the first two or three days of weaning, the calves cry continuously for their mother and some calves are very aggressive. The training of the calf begins as soon as it is enkralled. Basic commands like *Jhuk* (to bend down) etc are taught. The calf is also trained to wear chains and hobbles. Within 10-15 days of enkralling, the preliminary training is completed and the calf is removed from the *kraal*. The calf has to be dewormed and vaccinated for anthrax by the veterinary doctor. The diet is changed from rice to ragi along with a few vitamins that are mixed in the food. Every morning and evening, the calf is trained for an hour. They are sent out for grazing with the adults during the day, but are chained at the camp in the night.

After the age of six, the animals have to undergo, serious training at the camp. This helps in controlling vices and disciplining the animal, at an early age. Stereotype movements (like weaving, rocking forwards and backwards), due to chaining, must be controlled at a very early age, as it may persist throughout the animal's life. After 6 years of age, the animal has to be trained for light timber work and made to follow the same routine as the adults. This training does not exactly substitute actual work of the adult, but helps keep the calf fit. It also learns to be subservient and remains engaged mentally and physically.

#### **HAND REARING AND TRAINING OF AN ELEPHANT CALF**

##### **M.T.Paili, E. K. Radhakrishnan**

Hand rearing elephant calves is a very demanding job and requires tremendous commitment from the mahout, as well as, support from management. Kerala Forest Department also has had some experience in rearing elephant calves. The elephant training centre at Kodanadu, continues to maintain calves even today. There has been a case, 2 years ago, of hand rearing a female calf which was 15 days old, and found abandoned in the jungle. The authors of this article, were responsible for rearing the calf.

The calf was given very diluted milk for the first few days. The milk was diluted with twice the amount of water, along with turmeric powder. Turmeric has antiseptic properties. A small amount of glucose was also added into the milk. The milk had to be boiled properly and given at a lukewarm temperature. The calf had frequent diarrhoea, during the early days. So the mahouts provided coconut water as a relief. This was also to prevent dehydration. During the first month of the calf's arrival, the mahouts had a very trying period. The calf had to be supported with the mahout's legs at night, for warmth and comfort. After 2 months the calf was introduced to green fodder ie tender bamboo and grass shoots. The shoots were sprinkled with salt water. The calf began to chew the leaves for the salt and gradually developed a taste for green fodder. After 15 months, the quantity of fodder was raised to 4 kilos of grass per day. Besides grass she was also given 10 litres of milk, concentrates (twice a day), jaggery, vitamins, glucose and other tonics.

Towards the end of her first year she was taken out of the *kraal* for preliminary training. The mahouts took her out for short walks to familiarise her with vehicles, crowds and other sights and sounds. It was also necessary to avoid excessive human contact, and so was placed in the *kraal* for almost a year.

## **BATHING AN ELEPHANT**

### **A.K. Ponnappan**

A bath is very important to an elephant both in captivity and wild. They love spending lots of time in water. A bath cleans the body, helps in lowering the body temperature and also relaxes the elephant. Mahouts also clean wounds, sores or swellings during bath time. This prevents skin and foot infection and improves blood circulation. The scrub bath is also an opportunity for the mahout to bond with his elephant. It is best to wash an elephant in the mornings. Elephants that start to work early in the day are washed in the evenings. These elephants are given a shower with a hose before work.

Elephants are normally washed in streams or rivers. They are made to lie on one side in the water and ordered to stay still. The mahouts sprinkle water on the elephant and begin scrubbing the body with a coconut husk. The coconut husk is trimmed to a particular shape for scrubbing. The scrubbing has to be done in a sequential manner. The mahouts divide the elephant's body between themselves for scrubbing. The hands must not bend at the elbows and the motion of the hands must be forwards and sideways along the elephant's body. The entire body has to be scrubbed clean. Mud between folds of skin and the wrinkles must be removed. The process is exhausting and the mahouts rest for a few seconds between scrubbing. Pumice stone is also sometimes used for scrubbing.

The elephant is made to lie on its other side, after the first side is washed. It is then made to sit up and the head and the neck are washed in this position, followed by washing the feet and legs. The other side is washed in the same manner.

Wounds, swellings and abscesses are cleaned during a bath. Nails and the skin around the nails are trimmed. The inner regions of the mouth, space between nails, penis, anus and vagina are washed thoroughly. The inner thigh and hind legs of cow elephants in particular, must be scrubbed properly to remove urine stains.

### **Precautions while bathing an elephant:**

- Leave one chain fastened to the elephant's hind leg, like a trail chain, even in water. This makes it easier to chain the elephant, if it tries to bolt. Mahouts must be careful not to get entangled by the chain, when the elephant moves or stands up.
- The water must be clean and safe for the elephant to drink
- At least two mahouts must be present while bathing an elephant
- The head and tusks are washed by the first mahout, because the elephant may try to attack the other mahouts.
- Mahouts must be aware of the movement of elephant's feet under water. The elephant might accidentally crush some one's feet.

- The stick and hook must be accessible to the mahout at all times. They must carry at least a small knife on them, for self defence.
- Washing the belly, while the elephant is lying down, is usually a risky position. The mahout has to stand between the fore and hind legs of the elephant. He may get trapped between the legs and can drown, if the elephant rises abruptly. In such a case, the mahout has to stay close to the elephant's belly and stay on its side, as the elephant rises up.
- Some elephants may be nervous about entering unfamiliar water bodies. It is up to the mahout to use his ingenuity to get the elephant to the water.
- The coconut husks must not be trimmed on the elephant's body. Experienced mahouts may do so occasionally, but it is not advisable for amateur mahouts to follow the example.

## ELEPHANT FOOD AND FODDER

### A.K. Ponnappan and E.V. Radhakrishnan

#### Green fodder

In Kerala, the staple food of elephants in captivity is, coconut or palm leaves (*Caryota urens*). Coconut is cultivated in large scale for its commercial value. Hence mahouts do not have problems locating fodder. Most elephants prefer caryota palm to coconut palm. Caryota requires moist and shady areas to grow and is usually found growing along river banks. It does not have as much commercial importance as the coconut palm and so is not cultivated in a large scale. Hence the tree is becoming scarce and its distribution now, is limited to a few districts in Kerala. Due to this scarcity, fodder has to be delivered from these far away places in vehicles. There are fodder deliverers who collect fodder from wherever available and deliver it to the site on a weekly basis. Several temples and private owners procure fodder by this method.

**Fodder collection:** A mahout must know to climb palm and coconut trees. A circular loop called the *talappu* is used around the feet, by which the mahout hauls himself up the tree. The *talappu* is made smooth coir or a piece of cloth. During the climb, the mahout relies entirely on muscles of his hands and feet. The first time a mahout attempts to climb the tree, he may sustain scratches and bruises on his body.

Palm tree climbing requires tremendous practice and skill. While climbing, the mahout usually is clad only in a brief towel or *dhoti*, and he carries a big knife or *vettukatthi* with him around his waist with the sharp edge pointing downwards. After reaching the top, he has to look out for good branch and cut it using his *vettukatthi*, with one hand. This is a very precarious position as the mahout relies only on the strength of one hand and his feet to stay on top. While cutting the branch, he must be careful not to drop them on roof tops or crops and fields. It is possible to direct the direction of fall of the stalk by slightly tilting the branch's broad base with the *vettukatthi* as it falls.

The mahout must respect the demands of the tree owner and cut only those branch that he permits. He must remember that general good will of the public is essential for his elephant's survival, not only to obtain fodder but for any other favours as a well.

Climbing a palm tree is much more difficult, than a coconut tree. The palm trees become narrow towards the top, and the bases of the branches are smooth. The branches are also difficult to chop,

as they are heavier. It is not safe to climb the tree during strong winds or monsoons. Mahout must observe the terrain around the tree. Trees on rocky or steep terrains should be avoided. Mahouts are forced to take risks however, in case of fodder non-availability, as he cannot let his elephant starve.

Ants are found on palm trees and the mahouts may suffer from ant bites occasionally. While on top of the tree, the mahout must test the branches before resting his weight on them. Dried branches should be avoided. He should not stay on a branch for too long and should constantly shift his weight around. Getting down is done by relying on the rope between the feet.

After the branches are cut, they are plaited and bound with a strong, lengthy rope. While binding, the broad base of the branches should face the right side. If the branches extend too much on to the right side, they should be cut and shortened. At the top of the pile, one branch is placed inverted, with the midrib protruding upwards, for the (cow) elephant to get a grip, while picking up the bundle. Cow elephants carry fodder by their mouth and bulls carry them on their tusks. Fodder collection is a very exhausting process. It requires a lot of stamina and endurance.

### **Concentrate feed**

Elephants are given 'ration' or concentrate feed, once a day in most of the captive establishments. In the Forest Department, the feed is a combination of wheat, ragi and horse gram mixed and powdered together. Any cereal like rice, ragi, millets and lentils like horse gram, moong dhal or green gram (*Phaseolus mungo*) or Bengal gram can be combined together, to compose the concentrate feed.

### **Preparation**

Water is boiled in a big vessel along with salt. A small quantity of the powdered concentrate is sprinkled on the water, to indicate if the water has boiled. After the water boils, the powder will rise up like milk and to this more of the feed is added, along with constant stirring. The stirring has to be vigorous (with a long wooden laddle or a stick), to prevent the mixture from sticking onto the bottom and sides of the vessel. After a few seconds of stirring, the vessel is removed from the fire and the stirring continued until all the lumps are broken down into a homogenous mixture. The stirring requires strength as the mixture tends to harden, as it cools. The mixture is allowed to cool for hours before feeding the elephant. After the mixture is cooled, it is rolled into large balls.

Before feeding, the mahout bites into a small piece of the ball and spits it out to ward off evil eye. While feeding, the mahout must stand close to the elephant's body, on the right side, and place the ball into the mouth. It is not safe to tuck the ball deep into the mouth as the elephant may snap its mouth and pull the mahout off his feet. It is dangerous to feed the elephant from the front. If there are two mahouts feeding the elephant, the one who is rolling up the ball, must also stand on the elephant's side and not in front. Some tuskers may attack if the mahout accidentally places or rubs the hand that he has been holding the rice with, on their body. Every mahout must remember this vice and make it a habit to not touch his elephant with his dirty hand even though his elephant does not mind. It is safer to cultivate these habits early in the career.

## **TIMBER ELEPHANTS OF KERALA**

## **A.K.Ponnappan**

Tuskers, Makhnas and cow elephants are used for timber hauling in Kerala. Elephants belonging to temples are not ordinarily allowed to log. Privately owned and departmental elephants are used for logging. In Kerala, timber hauling or logging is by the [vakka](#) method.

**Preparing vakka:** *Vakka* is a fibre obtained from the bark of *Strecculia villosa* and is used as drag rope during hauling. A young tree is cut and the bark is peeled manually, by a certain flapping motion. The outer bark is discarded and the inner fibre is extracted as continuous, thin strands. The fibres are dried under the sun for a day or two, after which they are separated again. These separated strands are twisted together to finally form the *vakka* or drag rope. *Kadi*, (or bite) at one end of the *vakka*, is the region which the elephants bite, while dragging logs. It is prepared by padding one end of the *vakka* with fine rope strands, and softened by beating against the ground. *Vakka* fibre becomes pliant from being used by the elephant constantly. It has to be maintained carefully to last long. A good *vakka* may last for a year or more, if maintained carefully. But due to its unavailability and short durability the current practice of mahouts is to use nylon drag ropes. This damages the jaw and mouth parts of the elephant.

**Vakka changala:** *Vakka changala* (chains) is also an important logging tool. The chain passes through a loop in the *vakka* and is fastened on to the log by a clasp. [Vakkakettukaran](#) is the person who fastens the *vakka* onto logs, and he is also usually the second or third mahout of the elephant. It is his duty to fasten the *vakka* in a manner which is easy for dragging. It requires skill and intelligence while fastening more than one log onto the *vakka*.

### **Training elephants for timber hauling:**

Elephants calves are trained by the mahouts for timber hauling. The Forest Department used to auction their trained elephants to the private owners. In the last 20 years there has been an influx of elephants from other states like Karnataka, Assam, Bihar etc. These elephants have to be retrained for the *vakka* method. Mahouts train the elephant to do the following:

1. Drag logs to a destination
2. Stack logs
3. Arrange neat piles of stacks
4. Move or push logs, forwards and backwards with feet
5. Push logs forward using head
6. Load logs onto lorries
7. Use tusk or trunk to carry smaller logs

The elephant learns at least 12-15 verbal commands and as many foot commands to during training.

The nature of timber hauling varies according to the work place. Timber hauling takes place at saw mills, tree felling sites ( i.e. reserve forests , plantations and estates) or may be at an individual's house or public land. An elephant has to be trained to work efficiently at all these places.

### **Saw mills:**

Timber mills may own elephants or hire them temporarily. Work at saw mills consists of transporting logs over short distances (within the mill area), stacking and forming neat piles and also loading or unloading from vehicles. Ideally, elephants should be worked only for 6 hours a day but in most of the mills in Kerala, elephants work for more than 7- 8 hours. They are allowed to rest and feed for an hour in the afternoon.

### **Tree felling or clearing sites:**

The plantations owned by the state Forest Department are cleared periodically, on a contract basis. Elephants ( from the forest department or private owners) are leased out to the contractor and they are under his charge until the end of the lease period. Felling is of two types i.e. clear felling and selected felling. The former is done when all the trees irrespective of age, in the selected area are felled. For instance clear felling of teak is carried out every 40 years. The latter means that only selected trees are felled. In both cases, elephants are required for transporting logs to the dumping sites or depots. Based on their size, logs are classified as Classes I, II, III, etc. Elephants need to work with only the first two classes of logs. The smaller logs are transported by labourers. Felled logs have to bear a registration to prove they are legal. The elephants work by a schedule which includes rest, bath, feeding etc. Mahouts feed rice or ragi to the elephant before commencing work. Work begins around 7 am and continues until 2 pm. The mahouts may work for an hour in the afternoon. The elephant is then bathed and tied up for the night.

### **Selected felling sites:**

Working at selected felling requires greater caution on the part of the mahout. The elephant and the log have to be carefully manouvered between trees, to prevent damage to the younger, uncut trees.

### **Miscellaneous logging:**

The general public sometimes utilise elephants to transport logs or move uprooted trees from roadsides or houses. Elephants also are helpful in rescuing vehicles, bogged in mud.

### **Precautions at work:**

1. There must be at least two mahouts at a work site. One to ride the elephant and the other below to watch for obstacles on the path. The latter also assists with tying *vakka*.
2. The *vakka* must be checked everyday for their condition. Damaged and old *vakkas* must be discarded. Damaged *vakka* can easily snap when the elephant is dragging a log, injuring the elephant and mahout. The elephant may also develop a fear for the *vakka*.
3. [\*Vakkakettukaran\*](#) must fasten logs in a manner which makes dragging easier for the elephant. If the terrain is uneven or rough, he may place several smaller logs along the drag path, It would be easier for the elephant to roll the log over the smaller logs.
4. There prevails a thought in Kerala that the elephants dislike the *Vakkakettukaran*. The reason may be that, the elephants feel that he is the cause for all their miseries at work. Incidents have been reported where elephants have tried to kill their *Vakkakettukaran*. Mahouts must anticipate such tendencies and be prepared. If the elephant shows signs of agitation, in the presence of the *vakkakettukaran*, the mahouts must move it to a safe distance. This provides time to escape in case the elephant charges.

5. It is important to know the drag capacity of each elephant. An experienced mahout can make precise judgements. It is not correct to make an elephant carry or drag more weight than it can. It would be a dis-service to the profession and cruelty towards the elephants to do so for monetary benefit.
6. Tuskers must not be made to carry logs too often on their tusks.
7. Regular timber elephants develop a callous on their front legs, by abrasion of the *vakka*. This region is called the [vakkathazhambu](#). Injuries on these callouses do not heal easily.
8. Precautions while loading:
  - a. Log carrying lorries vehicles often become bogged in the soil. Elephants are used to lift them out of the mud.. The elephant should push the vehicle by its head or trunk, from the back. A padding of sacks must be provided on the head region, to avoid injuries. If the vehicle is pulled from the front, it might rear up on its back wheels and overturn. The elephant must never lift the vehicle by its tusks.
  - b. While loading logs onto a vehicle, there is a risk of the logs sliding down or the vehicle slipping backwards. If the vehicle is on an inclined or thickly wooded area, the danger is magnified. To avoid injuries for both mahout and elephant, it is safer to load or unload at flat, open areas. This provides opportunity for elephant to step aside before any accidents.
9. Elephants get injured while at work. Their trunk may get crushed by heavy logs, they may fall and fracture their bones, or strike their head against objects. It is the duty of the mahouts to prevent such accidents. The mahouts must have good communication between them and their activities have to be in a co ordinate manner. The mahout riding the elephant must look out for sharp, low lying branches and electric wires. The mahout on the ground must look out for pits, thick roots, cement slabs etc. Getting immediate medical aid at work sites is always a problem. Hence it is essential for mahouts to know some first -aid and home remedies. Some local remedies have been discussed elsewhere in this book.
10. Before arriving at a new work site, the mahout must ensure that the site holds sufficient fodder, water and shade for the elephant. Working near forest areas poses the risk of wild elephant attacks.

### Care of timber elephants:

1. Timber elephants must be given a scrub bath with pumice stone at least once a week. The scrub should last for 2-3 hours. This relaxes the elephant and improves muscle tone.
2. They must rest for a few minutes immediately after work, before they are given a drink or shower. If not, they may suffer from digestive disorders.
3. The local belief is that timber elephants are susceptible to gastric dis-orders. The following ingredients are used in preparing a herbal medicine to treat this condition. 1/2 bottle each of brandy, (or toddy), *dashamularishtam*, *Jeerakarishtam* (Ayurvedic medicines available in market), are mixed along with rice and administered once a week.
4. Some timber elephants are also given rice mixed with turmeric every day. Turmeric has antiseptic properties.
5. Elephants must be allowed to rest at least one day in a week
6. Mahouts must give the elephant a thorough scrub bath every evening after work. During the bath they must scrub the abrasions and injuries caused during the day. Elephants urinate often during work , especially cow elephants. The urine dries up along the sides of the leg leaving a stain. Therefore the mahouts must scrub these areas thoroughly.

## **TRANSPORTATION OF ELEPHANTS**

### **Dr. V. Krishnamurthy**

Transporting elephants from place to place is an important aspect of elephant management. Until a few years ago, elephants were transported only on foot, but these days they are also being transported by vehicles.

#### **Travelling on foot:**

A lot of planning has to go into organising the transport of elephants. Some important points to consider, while planning a journey are mentioned below.

1. The time, distance, and the topography of the land, determine the amount of fodder to be carried. Mahouts must carry sufficient fodder for the elephant.
2. The route chosen should have suitable shady areas and water sources.
3. A forest official in uniform, must accompany the elephant and mahout.
4. An elephant must be allowed to walk only during the cooler parts of the day i.e. (7-11 am and 3-7 pm)
5. They should walk only 25 kms each day.
6. During the hot parts of the day, the group may rest and the elephants must be tethered in shade and allowed to feed.
7. It is best to avoid villages and towns during the journey for several reasons
  - a. Elephants may become infected from cattle in the village.
  - b. The village dogs may annoy the elephant with their barking. Hence wooded or deserted paths are safest while travelling with elephants.
8. Elephants must not be allowed to drink from stagnant water bodies. They may contract infections from cattle that regularly bathe or drink the water. Water sources near agricultural field also must be avoided. They may contain pesticides and chemicals that may have seeped from the fields. It is best to provide well water or running water.
9. Elephants must not be given a shower, immediately after a long walk. They may develop colic.

#### **Transporting elephants on vehicles:**

Elephants are transported on lorries these days. They are generally nervous about riding on vehicles. But with practise and reassurance from mahouts they may gradually become accustomed to the same.

1. The elephant must be given a thorough medical check up before the journey.
2. The vehicle must be in excellent condition
3. The platform of the vehicle must be strong enough to with stand the elephants weight and must not have any sharp object sticking out.
4. A strong wooden or steel barricade must be attached onto the sides of the platform.
5. The vehicle must be equipped with restraining devices (spiked chain)
6. The barricade must be tall
7. The vehicle must not travel at a speed above 30 km/hr.

8. Vehicles specially designed for carrying elephants are being used by the Karnataka and West Bengal State Forest Department. These vehicles are equipped with a low chassis to reduce chances of the entire vehicle toppling over.
9. A ramp must be attached to the back board for the elephants to step down or up easily.
10. If the chassis is long, it is possible to carry two elephants at the same time.
11. Elephants must stand with their backs facing the cabin of the vehicle. This is to minimise the injury to the people inside if the elephant were to strike against the cabin sides.
12. A distance of 3.5 feet must be maintained between the elephant and the sides of the vehicle, both in front and back.
13. Pregnant cows or those with calves must not be transported on vehicles.

# SECTION IV

## MUSTH

**Musth in Captive Elephants  
Handling Musth Elephants  
Tranquillisation**

### MUSTH IN CAPTIVE ELEPHANTS

**Dr. K. Radhakrishna Kaimal**

In Kerala, an extensive study was conducted, to understand the phenomenon of musth in elephants. Musth is a physiological phenomena, occurring annually in male, Asian elephants. Physiological changes are accompanied by change in behaviour as well. It was observed that, musth occurred more regularly, in well nourished elephants, between the age group of 21- 80 years. *Moda* or adolescent musth was observed in elephants of age group 15-20 years. The average duration observed was 1-2 months. There was an exceptional case of 5 month duration, in one bull.

Musth occurs mostly in the cold season, the month of December, in Kerala. Musth period is divided into three phases: pre-musth, mid-musth or violent musth and post-musth. Musth is a very dangerous period for handling. Elephants become aggressive and become out of control and cause damage to life and property. Musth management in captivity, has always been a problem. However, by taking some precautionary measures, it is possible to overcome this problem. Some measures are discussed below.

- It is essential to chain or restrict the elephant's movements during musth on account of the violent behaviour. The chains have to be tested for their condition. The musth elephant is chained both by the hind and front legs. One of the fore legs is chained to any tree or a pillar in the front. This arrangement makes it safer for the mahout. He can approach the elephant from behind, to clean the tethering area, and also to move the chain from one leg to another
- Elephants may pull and fiddle with their chains during musth. They do not do this when they are not in musth. Therefore, special musth chains must be used. It is ideal to use a chain or fetter with 7/8" diameter links. The chains also must be fitted with 'U' shaped clamps with strong screws. There must be a distance of 2 feet, 60 cms between the tethering pole and elephant's hind leg. The chains and fastenings must be double checked.
- It is also sensible to keep spare chains, for emergency. A circular loop called the *thirukanni* (a ball and socket like joint) should be present on the chain. This allows the chain to twist without breaking.
- During musth, elephants have to be chained for long periods, until it becomes safe for mahouts to handle. Thus the elephant may develop chain sores from prolonged chaining. Mahouts must attempt to move the chains up and down the leg, with a long pole. He must stand behind the elephant to do this. It may not be possible to do so with every elephant, as some may grab the stick or charge at the mahout. So chain sores, during musth, are inevitable. Some elephants on the contrary, remain docile and allow chains to be transferred, from one leg to another.

- The mahout must check the strength of the tree to which the elephant is to be tethered. The surroundings must be clean and hygienic. The tree must be large enough to provide plenty of shade
- Elephants must be left alone during musth. They are agitated by the slightest noise, from traffic or people.
- A water tank, with constant supply of running water, must be provided. It must be placed at a distance reachable to the elephant's trunk. The tank must not be too close to the elephant, as it may destroy it.
- The elephant must be showered with water at least once a day, to cool it.
- The tethering site must be on a slight incline to facilitate drainage of urine and dung.
- The mahout must be present in the vicinity, throughout the musth period.

## **I. Pre-musth-Symptoms**

- Engorgement of temporal glands.
- Discharge observed at the temporal gland openings. This initial discharge is a dirty brown, viscous fluid, with a strong smell. This fluid may sometimes block the temporal opening or the opening may be too small to allow free flow of fluid. Both these conditions, are very uncomfortable to the elephant . It may scratch the region with a twig or any other sharp object. This may injure the area and cause an abscess. The gland on that side may stop secreting fluid and will have to be operated. On noticing signs of discomfort due to blockage, the mahout must assist the flow, by squeezing out the fluid.
- The perineal region, below the tail, enlarges. This is a very obvious symptom.
- The penis will emerge to its full length and elephant will masturbate frequently. The penis strikes against the stomach, resulting in ejaculation of seminal fluid. Sometimes the penis emerges into its full length and trails on the ground. The mahouts may have to prop it up with a cloth, to prevent abrasions.
- Urine dribbles constantly.
- Elephant exhibits a tendency to gore any moving or non moving object that catches its attention. There is an intense feeling of vengeance towards mahouts. The assistant mahouts must be careful while approaching the elephant. Many ignorant mahouts are unaware of the danger. They get killed or severely injured, while approaching the elephant during this period.

## **II. Mid or violent musth-Symptoms**

### **Initial phase of violent musth**

- The secretion of fluid is slow and it is viscous in nature.
- Behaviour continues to be unruly. It disobeys commands and will react violently on hearing mahout's voice.
- The body is stretched, taut and stiff. The trunk is extended forwards as if reaching out for something. The ears are spread out as if listening intently for sounds.

### **Middle phase of violent musth:**

- The temporal fluid flows faster (like tear drops) and has a pungent odour like that of gun powder, and can be recognised from a distance.
- Some elephants may have a red colour around the temporal region.
- Behaviour continues to be aggressive. The trunk is beaten on the ground as an indication of discontent and anger.
- Tendency to pull more violently at chains and tethers.
- Lack of appetite. Some elephants are offered palatable foods like banana and curd rice during these times.

#### **Final phase of violent musth:**

- This phase may last for a month.
- The glands reduce in size and the flow of the musth fluid subsides
- Normal urination with protrusion of penis.
- The elephant becomes less aggressive and violent and may even start obeying commands.

#### **III. Post musth:**

- This is the final stage of Musth
- The gland is regressed and flow of fluid stops completely
- Urination is normal
- The behaviour reverts to normal.
- Mahouts must be continue to be careful while handling. The elephant must have restraining chains on its body, while being moved around, right after musth.

### **HANDLING MUSTH ELEPHANTS**

#### **A.K. Ponnappan**

Musth is a special condition in an elephant, where it exhibits violent tendencies. It is believed that during musth, an elephant remembers its days in the wilderness, and longs for freedom.

Some general symptoms of musth are mentioned below.

- Loss of appetite
- Temporal gland swells up.
- Even before the musth fluid is secreted, tiny seed like particles are exuded out of the temporal gland, during a scrub bath. This does not necessarily occur in every elephant. It is seen at a very early stage of musth
- Elephants sometimes scratch the temporal area with twigs.
- The penis is released from its sheath. This occurs more often when the temperature is cooler
- In some weak elephants, the swelling on the temporal region is clearly pronounced
- The eyes appear dull and murky. Elephants stare straight viciously at any object.

Musth, in bull elephants, has always been a management problem, for mahouts and elephant managers, all over the world. In Kerala, elephants are required to work through out the year. Musth reduces the utility of the animal, for at least three months. It is possible to control the onset and duration of musth to some extent, by some methods. It is common practise in Kerala, to maintain

some elephants, in a perpetual state of weakness, to prevent them from going into musth. This is a very cruel practise and must be discouraged. Elephants that are over worked (ie. used both for logging and festivals simultaneously), will not go into musth, as the fluid draws back into the gland. This condition is uncomfortable to the animal and they become weak and exhausted.

When in musth, the mahouts cool the elephant by spraying water on its body. This helps the musth fluid to flow easily and quickly. Sometimes, the entire fluid may not flow out at once. In such a case, the animal may go into musth again in the same year. After musth, elephants are provided with a special diet, to improve their health

3kg of gingelly and [jaggery](#) mixed together can be fed to the elephant after musth, to improve its health. While under medication, the animal must not be allowed to work. Another mixture consisting of gingelly, a certain variety of fish, small onions can be given for five days. This helps in improving vigour. Gingelly must be used in small quantities only, otherwise it can raise body temperature.

### **Special musth odour:**

Almost all elephants produce strong distinctive odours during the initial phase of musth. The most common one being that of hen faeces. Sometimes the odours are pleasant too. Locals say that, elephants whose musth fluid smells like *poovan pazham*, (a special variety of banana) belong to the [Brahmin](#) caste, (highest caste in the Hindu religion). Other pleasant odours are those of *ezhilampala*, (*Alstonia scholaris*) or lotus.

### **Pointers for mahouts:**

A mahout must know his elephant's musth period, duration, and temperament during musth. It is advisable to tether the animal in the early stages of musth. Mahout must be able to read the symptoms of musth and take necessary precautions. Arrogance and carelessness on his part will not only endanger his life but also lives of other innocent people. Elephants do not necessarily exhibit the same behaviour every year. A mahout may be working with a particular elephant for a long time and it may be docile, even in musth. Yet, it is wiser to take precautions to prevent accidents.

- Mahouts are forced by some owners, to work their elephants, even when the animal is in full musth. Under such stressful conditions, the mahout may have to take brutal steps, to control the animal. This has led to the death of several mahouts and elephants.
- If an elephant is handled correctly during the juvenile musth period (*moda*), it may be manageable in musth, during its adulthood also. Such elephants are manageable even in full musth. Mahouts are able, to carry out regular activities such as, bath, fodder collection, and work, even in full musth. Musth should be a rest period for the animal and it must not be allowed to work, during this time
- During musth, elephants show a great animosity to their *chattakkaran*, (first mahout). The reason is because he is the only man, that the elephant fears. It is believed that during musth, elephants recollect all the pain and punishments and become vengeful towards the *chattakkaran*.

After the musth has subsided, the mahout must be very wary before unchaining the elephant as it is almost like breaking a new, or wild elephant. The elephant may be aggressive and the mahout may have to use a lot of force, to control the animal. This happens because the mahout loses control over his elephant when it is in musth. Most mahouts tend to leave the elephant alone, once its been tethered for musth. This practise is not correct. A mahout must be around his elephant during the entire musth period. The elephant will therefore not forget his mahout.

## TRANQUILLISATION

### **Dr. K.C. Panicker**

Tranquillising elephants running amok is a common practice these days in Kerala. This practice began only a few years ago. Most elephants cause extensive damage to property and life when they go out of control. Thus it is very essential to control and put them on chains as quickly as possible.

The Cap-chur gun or Dist-Inject is used for tranquillising elephants. The important components of the tranquilliser gun are adaptor, syringe, needle, plunger, charge and the 0.22 blanks.

The syringe is made of metal. A strong metal needle is placed on one end of the syringe and the opposite end is closed with a tail piece. A fine layer of thread or a feather is placed before the tail piece. A rubber plunger of about 3/4 th inches length acts as a piston within the syringe. The plunger has a recess on one end. The plunger is coated with lubricant for easy movement within the syringe and inserted within the syringe. The end of the plunger with the recess, should be facing outside the syringe. The charge is placed inside the recess. The syringe is then closed tightly with the tail piece. The required quantity of drug is measured and is poured into the open end of the syringe, until a certain mark. The needle is placed at the other end and the syringe is loaded within the projector of the gun. The adaptor of the projector is filled with the 0.22 charge and the darn gun is ready for darting.

The needle is aimed for the rump or the scapula (shoulder blade). On pulling the trigger, the charge in the gun explodes and propels the syringe forwards. The needle pierces the elephant's skin, and immediately the charge inside the syringe explodes. This pushes the plunger forwards in a piston like movement and the drug is injected into the muscles. The needle has a collar or a hook which prevents it from falling down. The drug commonly used for captive elephants is Xylazine hydrochloride.

The elephant begins to feel drowsy after 8-10 minutes of injecting the medicine. Most elephants continue to wander around or stand still right after being shot. There must be absolutely no disturbance or noise in the neighbourhood, after firing the gun. Noise and disturbances in the neighbourhood must be minimised or it will delay the drug's action. The first sign of drowsiness is relaxation of penis. A few minutes later the elephant falls asleep while standing and begin to snore. It is safe to wait for at least 45 minutes after injecting, before approaching the elephant. The elephant can be chained to the nearest tree. In the absence of a tree, or post, the elephant has to be dragged by means of a rope to the nearest tree in the area. Strong ropes are tied to the elephant's both feet and the free ends of the rope are held by several strong people. The people pulling the ropes must co-ordinate their movement so that the elephant is gradually dragged to the tethering site. The tethering site should offer plenty of shade. Mahouts must frequently water the elephant's

head to keep it cool. The elephant resumes its normal activity of feeding and drinking water after about 4-5 hours.

The dart gun normally used for tranquillisation has a short range, which means that the veterinary doctor has to stand rather close to the elephant while firing his gun. On being hit by the dart, elephant usually run forwards in panic. But sometimes elephants do turn around to attack the person firing the gun. This endangers his life and so proper safety arrangements should be made to prevent mishaps.

# SECTION V

## HANDLING

Handling of Elephants  
Significance of Sensitive Points  
Sensitive Regions  
Practical Aspects of Elephant Handling  
Practical Pointers  
Animal Psychology as Applied to Training  
Training Elephants at Elephant Camps

### HANDLING OF ELEPHANTS

**Dr. K.C.Panicker**

Elephant being the largest land mammal and also a creature of intelligence, has to be handled very carefully. Discussed below are some points that need to be understood, in order to handle elephants properly.

#### RESTRAINING DEVICES

A variety of devices are used to control elephants. They are *cherukol* (short stick), *valiya kol* (long pole), *thotti* (*ankus*). The short stick measures 3.5 -4 feet in length and is about 2-2.5 inches thick. The anterior end is rounded and thicker. The mahouts beat the elephant with that end. The stick is made from the branches of a few local trees are used. The mahout must always carry the stick with him while approaching the elephant.

*Thotti* or hook is 3.5 feet in length and 3 inches thick. One end is rounded and thicker than the rest. To this region an iron hook is attached. The region above the hook is flat or rounded. The regions above and around the hook are covered with brass. The hook is used to control the animal.

*Valiya kol* or long pole is 10.5 feet in length and 5.5 inches in thickness. On the rounded end of the pole, a piece of iron projection, of about 1 inch length is present. On the opposite end a four inch long knife is placed. Sometimes the knife is replaced by a rounded ball, made of iron. The latter inflicts pain but does not cause external injuries. The end which bears the *kooru*, can cause punctures and open wounds. The *valiya kol* is meant to be used from a distance. ie when the elephant does not allow the mahout to come close.

All the above mentioned devices must be used with extreme caution. It requires a lot of experience to understand the appropriate use of these devices. The devices must be used only as a last resort.

#### Chains:

Elephants may be tame or docile, but in captivity they require chains. Chains make it easier to fasten an elephant that has bolted or is out of control. They are a precaution against any accidents, damage to property and loss of life. While tethering, one chain is fastened on to one of the hindlegs and the other to a tree or solid object. If an elephant is mischievous, one of the hind legs is also

fastened to an object in front of the elephant. The chains should not be too tight. The hook on the chain must further be strengthened by using a small piece of plastic rope or fibre. The knots must be strong, so that the elephant is unable to open it with its trunk tip. The same chain can be used as a body chain, while the elephant is walking. One end stays on one of the hind legs and the other goes around the body. The hook on the loose end of the chain, is tied loosely to one of the links. If the chains are fastened too tightly, the elephant will not be able to walk. When the elephant bolts or goes out of control, it makes it possible for the mahout below, to snap the chain. The mahout on top can push the chain down to trail on the ground. On finding a suitable tree or post, the mahouts should try to fasten the chain.

Elephant chains should be strong and flawless. The tethering chains should be 1/2, 5/8 or 3/4 th inches in thickness and 21 feet in length. Hobbles should be 11 feet in length. The rope around the neck is 21 feet long and is doubled while tying around the neck. In North India, chains with spiked belts are used to fasten elephants.

## **MOUNTING AND RIDING**

An elephant can be mounted in 8 different ways they are; mounting by front and hind legs, by ears, by trunk, and by stepping on tusks. Similarly elephants can be dismounted by 10 methods. The first eight, are the same as in mounting. The other methods are dismounting via tail and by using the body chains. While riding an elephant, it is safer to use the rope around the neck. The rider must insert his feet between the ropes and the neck, for better balance.

### **Foot commands:**

Elephants are trained to obey foot commands at an early age. They are trained to respond to the movements of the rope around the neck. Some basic foot commands are listed below:

<b>Walk forwards</b>	Press with toes behind elephant's ears
<b>Walk backwards</b>	Press backwards with heels
<b>Lift trunk</b>	Use toes and push upwards
<b>To sit down</b>	Use one heel and push downwards. The rider must remove feet from the rope, when the elephant begins to start sitting.
<b>Turn left</b>	Hold left heel backwards and press right toe forwards
<b>Turn right</b>	Hold right heel backwards and press left toe forwards

## **BREAKING AN ELEPHANT**

The breaking of an elephant in this context is different from the breaking of a horse. In Kerala, the process by which a new mahout establishes control over an elephant is called [\*Kettiashikkal\*](#). Elephants do not easily accept a change of mahouts. Mahouts also need time to understand the elephant's personality.

If the previous mahout is available, the new mahout should spend time observing how he handles the elephant. He should also in the presence of the other mahout assist with chores such as cleaning

the tethering area, scrubbing, feeding, etc. The elephant would thus accept the new mahout as its caretaker. Gradually the new mahout must try to make elephant perform various commands. The elephant may act aggressive initially. The mahout must control the elephants with the restraining devices or words of command. The elephant thus develops a fear for the new mahout but at the same time also learns to trust. The mahout however must be very careful during this initial bonding period. He must carry his restraining devices while approaching the elephant. The elephant should be properly chained ie hobbles and body chains when being taken out for walks. Thus the relationship between mahout and elephant develops gradually.

In the recent years, [Kettiazhikkal](#) has taken a violent form. Mahouts do not follow the above procedure. They attempt to control the elephant only by physical force. Several mahouts approach the elephant from various sides and inflict injuries using long pole, stick and hook. Elephants resist for a while but then they succumb to injuries and pain and allow the mahout to take control. This is not a correct method. several elephant have been severely injured and killed during [kettiazhikkal](#). Such elephants eventually turn out untrustworthy and killers. This method is extremely cruel and must be discouraged by all those who are concerned about the welfare of elephants.

## SIGNIFICANCE OF SENSITIVE POINTS

**Dr. K.C. Panicker**

According to the ancient, Indian text *Hastayurveda*, there are 107 sensitive points on the elephant's body. These sensitive points are called as [Marmams](#), in [Malayalam](#). The text says that, injuries on any one of these points can cause serious health problems to the elephant. These points are distributed through out the body and their location and numbers are discussed below.

Location	Numbers
Limbs ( all 4 feet )	44 ( 11 on each feet)
Lower abdomen	3
Chest	9
Back	14
Neck	12
Head	25

The [marmams](#) are classified as follows:

Classification	Numbers
<i>Asthi</i>	8
<i>Snayu</i>	33
<i>Dhamani</i>	9
<i>Sira</i>	17
<i>Sandhi</i>	40

Based on their location these [marmams](#) are named as follows:

Location	Name
Lower joint of the limbs	<i>Chowlam</i>
Knee of fore limb	<i>Kopparam</i>
Knee of hind limb	<i>Janu</i>
Tip of trunk	<i>Jara</i>
Inside the mouth	<i>Anthakari</i>
Centre of head	<i>Avajam</i>
Between eyebrows	<i>Vataram</i>
Temporal region	<i>Arunan</i>
Behind the seating - area of mahout	<i>Shroni</i>
Pelvis	<i>Pakwi</i>
In front of penis	<i>Mutratravam</i>

The effect of injuries on the various [marmams](#) are discussed below:

<a href="#">Marmam</a> -classification	Effects
<i>Asthi</i>	Swellings
<i>Snayu</i>	Chronic pain and nerve stretching
<i>Dhamani</i>	Blood flow
<i>Sira</i>	Viscous blood flows out, thirst and temporary insanity
<i>Sandhi</i>	Swelling at joints, or joints become thin, and weak

Besides the above mentioned regions, few other regions such as the anal opening, the heart, centre of the face, penis, between breasts, central pelvis, centre of the forehead bump, are also extremely sensitive to pressure or injury. There are at least 30 [marmams](#) in all these regions. Injuries are caused by excessive use of restraining devices. Mahouts have to be very careful about using their hook, long pole and stick.

## SENSITIVE REGIONS

A.K. Ponnappan

It is impossible for a mahout to remember all the 107 [marmams](#) on the elephant's body. Listed below are some sensitive parts and regions and the effect of injury to these regions. Some of the region have been listed by their local names, because there is no English equivalent to these terms. Elephants also have several callouses on their body acquired from work, laying down and also from chains. Injuries on callouses do not heal completely as they are constantly under pressure. Most of

the injuries are caused due to ignorance and uncontrolled use of restraining devices. Mahouts must be aware that the well being of an elephant rests in their hands.

1. **Trunk tip:** The finger like tip on the trunk is called the *thunikkai*. Trunk is the most important organ to an elephant. It depends on the trunk for a variety of functions such as breathing, sniffing, drinking water, breaking branches etc. The *thunikkai* can pick up small objects from the ground. Damage to this appendage will affect the elephant's ability to perform the above mentioned activities. The mahout must hence be careful, that the elephant does not injure its trunk, by accident.
2. **Temporal region:** The temporal region is called the *kannakuzhi*. Injuries to this area due to use of stick, or *ankus* will cause blindness eventually. Deep wounds may also affect flow of musth fluid in bulls.
3. **Head:** Head injuries may lead to brain damage, internal swelling and pus formation.
4. **Forehead bump:** The forehead bump is called *Vayukumbham*. Injuries result in swelling and pus. The pus sometimes drips out of the nose.
5. **Irikkasthanam:** The mahout's seat on elephant back is called *irikkasthanam*. This region becomes tender due to constant use of pressure by mahout.
6. **Vakkathazambu:** Timber elephants develop callouses on their forelegs from constant abrasion of the logging rope or *vakka*. This callous is called the *vakkathazambu*. This area becomes sensitive over the years.
7. **Thavalakkuzhi:** The depression behind the forelegs, above the base of foot is called *thavalakkuzhi*. Abuse with *valiya kol* (or long pole), will cause the front feet to bend inwards.
8. **Penis:** At times penis may emerge to its full length, and trail on the ground. During this condition the mahout must be careful while using the stick. The elephant must walk at a slow pace to prevent abrasions from trailing on the ground.
9. **Belly:** The belly is tender when it is full. Mahouts must not use the stick on the belly. It may affect the digestion and may also cause internal infection leading to pus formation.
10. **Kidakkathazhambu:** Callous developed on the pelvis, from laying on the sides is called *kidakkathazhambu*.
11. **Chain callouses:** Regular use of hobbles and body chains makes skin on these areas calloused.
12. **Palate:** The upper palate is called the *melannakku*. It is thick in texture, yet a slight prod with a sharp object can cause bleeding. During festivals, mahouts prod this region with their stick, thus forcing the elephant to hold its head upright. This practise must be discouraged.
13. **The perineal region:** The base of the penis is in the perineal region. Prodding or beating on this area, will also injure the penis.

## PRACTICAL ASPECTS OF ELEPHANT HANDLING

### A.K. Ponnappan, E.V. Radhakrishnan

The profession of a mahout is a demanding one and requires several kinds of skills and virtues from the mahout. Listed below are pointers for mahouts, which may help them in their profession.

Mahouts should know :

- To climb a palm tree
- To prepare feed for the elephant
- To prepare coconut husks for bathing elephants
- To bathe an elephant
- To identify medicinal plants and prepare traditional medications
- To identify ailments in elephants
- To swim
- To identify various fodder species
- Foot and verbal commands
- Logging and [ezhunnallippu](#) practices (temple festivals)
- Preparing ropes or [vakka](#)
- Sensitive points on elephant's body
- Use of restraining devices and their care.

### **Mahout personality:**

- Mahouts should have stamina, quick reflexes, sense of discrimination, and most of all patience, perseverance and responsibility.
- Common sense and a sharp mind are essential qualities for a mahout to handle in a crisis.
- A short tempered person must not enter this profession. He may use the elephant to vent his anger.
- Mahouts must know how to bargain for fodder with local public. Most often, the public do not charge for fodder, but sometimes mahouts have to pay. Good relationship with public will enable a mahout to get fodder free of cost and also any other assistance.

**Superstitions and local beliefs:** A lot of and myths exist among the mahouts, about the profession and elephants. Gut feeling and intuition are given a lot of importance.

- An elephant is considered as representative form of Lord Ganesha, the God with the elephant head. Hence it is respected and worshipped all over India. Therefore, it is considered disrespectful, to mount or ride the elephant with footwear on. Before mounting, the mahout must pray and have a very peaceful mind. If he is agitated mentally and does not feel confident, he should not approach the elephant at all. This is because elephants ( and other animals) can sense emotions such as fear, and apprehension.
- Mahouts and the locals believe that money gained by deceit in this profession, will bring negative results to the person who cheated i.e. money gained by overworking and starving the elephant, or by cheating the mahout of his rightful pay, will bring the downfall of the owner. The belief is that elephants can curse. and so anybody causing discomfort and misery to it will be cursed.
- Elephants are often afflicted by evil eye. Mahouts talk of a person in Kerala, who is able to cast a spell on elephants. If he walked by an elephant and made a comment, that elephant would immediately go berserk. After this, only he can control the elephant. He would charge a fee for doing so and it is said that he makes a living this way.

### **Personal safety :**

- While approaching the elephant, mahout must carry restraining devices.

- While riding the elephant, mahout must look out for low lying branches, electric wires and ropes. The elephant must be made to go slow or manoeuvre to avoid the obstacle.
- The *dhoti*, must be worn above the ankle, so that they do not trip on it while mounting or dismounting.

### **Other points:**

- Mahouts have to make sure that their elephants are well fed and drink enough water. The tethering area must be maintained clean. Mahouts must give scrub baths every day to the elephant. Only after meeting the elephant's needs should the mahout retire for the day. Mahouts have been known to ignore keep aside their life matters, until they have tended to their elephant's needs.
- While in a public place such as a crowded road or festival site, the mahout must watch out if the elephant is mis behaving. It may try to grab food from nearby shops, chase hen, cattle or dogs. People may try to grab the elephant's tail or try to touch. Most elephants do not like being touched or fondled by strangers.
- Elephants must not be allowed to stand close to an electric post or wall. they may try to lean against or may push it down. Standing an elephant below or close to, any electric apparatus or device can be dangerous. A spark from the device may scare the elephant and it may bolt. The mahout while walking with the elephant, must watch for concrete or cement slabs , septic tank lids, which may collapse under the elephant's weight. He must also look out for glass pieces and sharp stones. The mahout must realise that he is responsible for the elephant's safety.
- A mahout must always carry a pocket knife. This is not only for personal safety, but also comes handy at several occasions such as, to remove glass or stones embedded in the elephant's sole, to shell coconuts, cut ropes, and also to trim coconut husk.
- It is common for elephants to panic for some reason and run away from the mahout. An elephant that has mis-behaved is like a guilty child. Instead of punishing it, the mahout must soothe it with kind words and food. This will revive elephant's faith in the mahout, and on another occasion when it bolts, it may immediately return to the mahout, after bolting.
- Elephants love to spray mud on themselves. This can be exasperating when a mahout has spent hours scrubbing and cleaning the elephant for a function. Mahouts therefore scatter elephant dung on the hole where the elephant digs the mud from. Elephants do not like touching their own dung and so they are discouraged from taking the mud.
- When tying a rope around the elephant's neck, the mahout must make the elephant place its feet firmly on the ground. This is to prevent the elephant from shifting its feet or kicking backwards.
- The verbal commands to the elephant must be loud and firm in tone. It should jolt the elephant into action.
- When walking along side the elephant, the mahout must be mindful of the movement of the elephant's feet to avoid being stepped upon and trampled.

## **PRACTICAL POINTERS**

### **Maheshwaran Namboothiri Pad**

#### **Diet**

- The elephant should not be overfed as it might cause impaction or other abdominal ailments
- Mud eating should be discouraged

### **Body temperature**

- Body temperature should not be caused to change dramatically or suddenly from hot to cool or vice versa. An example of wrong practice is bathing an elephant in a river immediately after work.

### **Body sensitivity to substances**

- The tethering site should be free of slush and dirt as the microbes in it can cause diseases on the legs, such as foot rot.
- The elephant is allergic to human excreta and care should be taken to avoid contact of human waste with the elephant's skin.

### **Approaching an elephant**

- Before approaching an elephant, the length of the chain by which it is tied must be checked. This is to see how far it can reach out.
- The elephant should be approached from the back or side, not the front
- Avoid bending or becoming supine before an elephant, even accidentally, because it has a natural tendency to take advantage of a lower position.
- An elephant should not be wakened abruptly. The elephant should approach from the back with soothing sounds to wake the animal.

### **Body position**

- An elephant should be tied with its head always in a slightly elevated position and not in an overhanging position. There were instances of elephants which were chained close to a well found hanging down dead.

### **Mahout relationship**

- a mahout must be brave with good reflexes and presence of mind
- He should not use weapons indiscriminately as the elephant will develop hatred towards the mahout and the mahout will lose his command over the elephant.
- Always use intelligence and clever tactics, as the elephant is a very intelligent creature.

## **ANIMAL PSYCHOLOGY AS APPLIED TO TRAINING**

It is always a wonder to watch a huge creature like the elephant, being controlled by humans. Domestication and training of elephants goes back to several 1000 years. Elephants were trained for a variety of purposes such as warfare, parades, timber hauling etc. Even today, elephants play an important role in various cultures and societies. They continue to be trained for other reasons like, circuses, joy rides etc. The secret of successful training, lies in understanding the basic principles of training. It also involves, understanding the animal's biology and psychology.

Elephants are trained at a very early age, by mahouts. It takes at least two years to train an elephant for timber hauling and festivals. The behaviour and temperament of an elephant is moulded during the training period, and remains throughout the elephants life. To be a successful trainer, it is important to be sensible, sensitive and patient. The trainer or mahout must be able to develop a bond with his elephant. The bonding comes over a period of time.

Like humans, and other animals, elephants also learn by trial and error. The lessons set in firmly, with repetition and practice. If the elephant responds positively to a command, the mahout must appreciate the elephant, with kind words, caresses and also food. Rewarding or acknowledging positive action is very important during training. This reinforces good behaviour and the elephant will try to do the correct action, for the reward.

Curiosity is a natural thing for animals and humans. All of us learn lessons in life because we are curious. A mahout must not discourage his elephants curiosity. He must allow the elephant to explore and find it's own understanding about various things. They use their sense of smell, touch and hearing to understand their surroundings. This is called cognitive learning. For instance, if an elephant is being taught to cross a bridge, it will first sniff the bridge or the floor, with it's trunk. It will cross the bridge, only if it is convinced of it's safety. The mahout must respect the elephant's fears and with patience, gently guide the elephant to cross the bridge. This not only helps the elephant to overcome fears but also increases it's trust in the mahout.

A mahout must also be sensible about training. He must consider the age, body condition and temperament of an elephant before training it for a particular task. The body condition of an elephant is an important factor in training. An elephant that is arthritic or with stiff limbs cannot be expected to walk faster or is not suited for timber hauling. Similarly, an elephant with an aggressive temperament is not suitable for temple festivals.

### **Golden rules for animal trainers:**

- Never compromise the animal's welfare.
- Avoid corporal punishment.
- Develop a personal bond between you and your animal.
- Never prolong training sessions.
- Be consistent with a particular style of teaching.
- Repeat commands, with necessary modulations in the voice.
- Always be encouraging and positive.
- Be patient.

## **TRAINING ELEPHANTS AT ELEPHANT CAMPS**

### **A.K. Ponnappan**

#### **Care of new capture:**

Newly captured elephants sustain several injuries during their fall and also while being transported in to the camp site. These injuries have to be treated immediately after the elephant is enralled. A herbal preparation consisting of salt, buffalo dung, coffee plant leaves, leaves of *panal* ( *Glycosmis*

*pentaphylla) kammatti*, and turpentine are splashed or sprayed with considerable force on the elephant's body. The forceful application combined with the action of the ingredients, help in treating the sores and bruises.

## **Training of new capture:**

### **Step I**

Training of an elephant begins right from the moment it is taken out from the pit. The elephant comes into contact with human beings and learns the first lessons of submissiveness. However the formal training begins right after it is enralled. The elephant reacts strongly to being in the [\*kraal\*](#) and also to the application of medicine. The mahout in charge of training would say commands in [\*Malayalam\*](#), ie "*aruthe*", meaning "No" or "don't". The elephant is taught to keep its face away when the mahout approaches the [\*kraal\*](#). The mahout throws a piece of fodder to the elephant's left side. The elephant moves towards the fodder and the mahout says "*edathe*" which is the command for moving to the left. The process is repeated until the elephant responds to the commands. The same method is applied to teach the elephant to move to the right.

### **Step II**

Newly captured elephants, do not always place their foot firmly on the ground. This is a sign of nervousness and agitation. The mahouts therefore teach the elephant to place its feet firmly on the ground. Once the elephant learns to do so, ropes are tied onto its feet to familiarise with the idea of chains. The rope is eventually replaced by real chains. The mahout then attempts to enter the [\*kraal\*](#) to clean it and also to familiarise the elephant with himself.

### **Step III**

The elephant is taken out of the [\*kraal\*](#), for a few hours, every day, after a few weeks. *Koonkies* are used to assist the mahouts. Ropes are secured around the body and with great caution, the elephant is slowly taken to a river side or stream to be washed. This phase of the training is very risky because the elephant may try to attack the mahouts.

### **Step IV**

Elephants are taught to obey foot commands by using sharp prods on the ears. The prods are accompanied by, the mahout's foot movements on the rope, around the neck.

### **Step V**

Elephants are taken for walks along the country side, to familiarise them with various noises and sights of civilisation. Elephants are also trained for timber hauling and also for festivals. The entire training period takes about 1-2 years.

# SECTION VI

## WILD ELEPHANTS AND CAPTURE

**Wildlife Protection Act**  
**Life of Wild Elephants**  
**Man-Elephant Conflict - Case Study in North Bengal**  
**Elephant Capture and Training in Kerala Forest Department**  
**Elephant Capturing in North-eastern India**

### THE WILDLIFE PROTECTION ACT

**M.I. Verghese**

#### **Introduction**

In 1972, the Indian Parliament passed the Wildlife Protection Act, to establish a standardised national policy for wildlife protection in the country. In 1973 June 1st, this Wildlife Protection Act was endorsed in Kerala by its State Parliament. The law has 68 sections pertaining to various aspects of wildlife conservation.

#### **Schedule - I of the Wildlife Protection Act**

There are 6 Schedules in the Wildlife Protection Act. Initially there were only 5 but in 1991 a 6th schedule was introduced. The Schedule I animals are those that face the threat of extinction due to poaching and trade and have very small existing populations in the wild. The elephant is placed under the category 12-A of Schedule I proving that it is an animal facing the threat of extinction. The animals in the Schedule I and part II of Schedule I are under strict government protection.

#### **Protocols for Schedule - I Animals**

Since the elephant is a Schedule -I animal, the following protocols apply to both captive and wild elephants.

##### **1.Declaration of ownership:**

The 40th-44th sections of the Wildlife Protection Act are directly related to Schedule I animals and also to the animals in part II of Schedule II. The 40th section requires the owners of animals belonging to the above mentioned categories, to declare their ownership to the Government that they possess these particular animals. This claim should be documented, within one month of acquiring the animal. The Chief Wildlife Warden of the state, or the District Forest Officer may be contacted for the same.

##### **Ownership certificate:**

The law requires the elephant owners to register their elephants at the District Forest Officer's office. Though this Act was passed in Kerala State in 1973, most of the elephants in captivity are

not registered with the government. Many elephant owners are unaware of or insensitive to, this requirement which constitutes a clear violation of the act and is punishable.

**Procedure:**

To apply for an ownership certificate, the applicant has to fill up form no-13, which is available at every District Range Office. The completed form is sent to the Chief Conservator's office who informs the applicant, (on form no-14) through the DFO's office, that his elephant would be inspected by officials on a certain date. The inspecting officer will inspect the tethering area, take measurements of the elephant and prepare a report on form no-15 and send it to the Conservator's office in the capital. The applicant will be issued an ownership certificate (on form No -16) after the authorities are convinced of the elephant's identity and satisfied with its health condition.

**Charges:**

The charges for violation of this protocol are stated in Section - 51 of the Wildlife Protection Act, and it entails a 1-6 year prison sentence or payment of Rs 5000 as fine. If the person is charged for repeating the offence, his punishment is doubled. An owner who is ignorant of the law, is permitted by the authorities, to apply for an ownership certificate. The charges were amended in 1991.

**2. Transfer or transportation of elephants:**

To transfer an elephant from one place to another, the owner must inform the officer concerned, i.e., the Range Officer

**Procedure:**

The applicant must receive permission from the range officer, on form no-4, which requires the applicant to submit his ownership certificate or registration number. In the absence of an ownership certificate, the forest officers inform the owners to apply for a registration certificate. If this condition has been satisfied, the elephant is inspected by a veterinary surgeon to ensure the health condition of the animal and to see if the animal is fit enough to make the journey by foot or vehicle. If the veterinarian agrees to send the animal on the journey, the officers would issue a Transport - Permit or form no - 6 to the applicant. In Kerala, elephants are often brought from Bihar and U.P. and the licence or ownership certificate is not renewed. The certificate of registration done in other states is valid only up to a period of 1 month. After which, the certificate has to be renewed or the elephant has to be re-registered in the current state of domicile.

**3. Elephant attacks:**

The Act addresses issues related to wildlife invasion or attack, on human beings. If wild elephants attacked a village or a house or destroyed several acres of plantation and crops, the victims are likely to be compensated by the government. In 1980, the state passed a provision for the victims of attack by the animals enlisted in the Wildlife Protection Act. A sum of Rs. 10,000 is paid for loss of life, and handicap and Rs 5000 depending on the extent of damage.

**Procedure:**

The victim has to apply for his re-imburement to the Range Officer of the concerned range. The Range Officer would forward this application to the District Forest Officer who will sanction the amount to the descendants of the victim in case of loss of life or compensate for the damage to property. There are certain conditions to receiving or issuing compensations. If the victim has been killed or attacked because he/she ventured into the restricted forest area, he/she will not be compensated, but will be compensated, if the victim was attacked while he/she were on the public road. Similarly if the victim was attacked at his/her *patta* (or - allotted) piece of land in the forest or the road leading to it, he/she is eligible for the compensation. The compensation does not apply to captive or domestic elephants. If any mahout or any individual were to be attacked by a captive elephant he will not be compensated.

Wild elephants that are a threat to humans, may be removed with orders from the Chief Conservator of Forests. The law has a provision for killing wild animals of Schedule -I that become dangerous to humans beings.

#### **4. Elephant Trophies:**

An ownership certificate is also required for possessing the body parts of a Schedule-I animals also called as "Trophies". It is commonly seen that people posses several items in their homes made of Ivory, and furnishings made of elephant's body parts. The hairs in the elephant tail are popular as jewellery. It is illegal to keep trophies of animals belonging to schedule - I of the Wildlife protection act without proper permit. The trophies have to be declared voluntarily to the nearest forest officer and a certificate of ownership has to be obtained.

### **LIFE OF WILD ELEPHANTS**

#### **Dr. P.S.Easa,**

Elephants have been associated with man since time immemorial. It has been an object of worship and embodiment of strength, size and intelligence. The Indian culture is so much associated with this animal that earlier literature has recorded observations on elephants in detail. The present day knowledge on Asian elephants in the wild come from several studies conducted in Malaysia, Sri Lanka and India.

#### **Distribution and Habitat**

Asian elephant was once distributed from Tigris and Euphrates Valleys of Syria and Iraq to the yellow river of China and South to Sumatra (Daniel, 1995). At present it is confined to India, Nepal, Bhutan, Bangladesh, China, Burma (Myanmar), Thailand, Cambodia, Laos, Vietnam, Malaysia, Sri Lanka and Indonesia. In India, it exists as four populations. The four populations are distributed in the South, Central, Northwest and Northeast regions in India.

In South India, they are distributed in the forests of Western and Eastern Ghats in the states of Kerala, Karnataka and Tamil Nadu. Elephants in the Eastern Ghats in Orissa and Bihar states form the Central population. Terai forest regions of Uttar Pradesh along the foothills of Himalayas form the population in the North Western India. The North-eastern population is distribute over the Himalayan foothills of Bhutan and North West Bengal eastwards into the states of Assam,

Arunachal Pradesh, Nagaland, Manipur, Mizoram, Tripura and Meghalaya. The habitat of these populations are further fragmented dividing these into isolated populations. Thus, about ten sub populations could be identified within the South Indian population.

### **Elephants in Kerala exist as seven populations.**

1. Agasthyamala: It consists of those within the Neyyar, Peppara, Shenduruny and Kulathupuzha areas south of Ariankavu pass. This region has contiguity with Mundanthurai-Kalakkad of Tamil Nadu.
2. Periyar: This is distributed from the north of Ariankavu pass and include Ranni, Konni, Achenkovil, extending upto the borders of Periyar Tiger Reserve. The east of this region is the Varashanadu hills.
3. Idukki: Idukki Wildlife Sanctuary and the forests of adjacent Ayyappankovil and Nagarampara Reserves harbour an isolated and probably the most disturbed population of about 100 elephants.
4. Anamalai: The areas under the forest divisions of Malayatoor, Munnar, Vazhachal, Chalakudy, Parambikulam, Nemmara and Munnar (Wildlife) is contiguous with Indira Gandhi Wildlife Sanctuary and Palni hills of Tamil Nadu. This population could be considered to have a larger extent of forests with comparatively less disturbance.
5. Palakkad: Forests of Walayar and Muthikulam Reserve was once contiguous with the adjacent forests of Silent Valley and Attappadi. At present, this has contiguity with part of Shiruvani area of Tamil Nadu.
6. Silent Valley - Nilambur: This population occupies the areas of Attappadi, Silent Valley, Nilambur and part of Wayanad (Meppadi). The contiguity with the Nilgiris and Anakkatti of Tamil Nadu further extends the area available to elephants in the region.
7. The Wayanad population exists in Kerala part as two due to the discontinuity within the State. However, these populations are connected through forests of Karnataka. The southern Wayanad population within Kerala are in Kurichiat, Muthanga and Bathery areas. The northern population are distributed over Tholpetty, Begur, Kottiyoor and Aralam areas which are connected to the Kuttiadi - Thamarassery regions through a narrow belt of forest at Periyar.

### **Range**

Elephant is a wide ranging animal requiring larger extent of continuous stretch of forests for food, water and shelter. Studies conducted in the wild on the home range of elephants have indicated that a herd of elephant would require a minimum area of about 650 km<sup>2</sup>. The home range size may vary according to the regions, the vegetation type which inturn is reflected in the food and water availability. The home range size was about 150 km<sup>2</sup> in Parambikulam , 115 km<sup>2</sup> in Sathyamangalam and 650 km<sup>2</sup> in Mudumalai. there could be seasonal variations in home range size depending on the environmental factors.

### **Seasonal Migration**

Seasonal movements of elephant herds have been recorded from different elephant ranges. Studies in Mudumalai, Sathyamangalam forests, Parambikulam, Wayanad and other areas have indicated that these movements are mostly influenced by water and food availability.

## **Thermoregulation**

Elephants with its large sized body produce metabolic heat. The colour of the skin absorbs more heat and this combined with the absence of sweat gland force the animal to go for a thermoregulatory mechanism through behavioural changes. Elephants in the wild normally spend the hottest period of the day in the shade of the trees reducing the activity to a considerable extent. Further, they also go for wallowing in muddy waters which help them to keep their skin moist.

## **Feeding**

Observations of elephants in the wild have indicated that it spends about more than 70% of the time for feeding. However, there are seasonal differences depending on the availability of food and also on the variation in diurnal temperature. The time spent for resting and wallowing sharply increase in dry season and there is a reduction in the time spent for feeding.

Elephant is a polyphagous animal feeding on a number of plant species belonging to different family. Observations have indicated utilisation of 93 species in Parambikulam and 112 species in Sathyamangalam area. A major share of the food species are of grasses and sedges. Grasses, bamboos (again a grass) and reed are the most utilised. There are seasonal differences in the utilisation of plant species and also plant parts. The high crowned molar teeth with their rasp like surface are structured for grinding fibrous and siliceous food materials. The prehensile trunk also help them to deal with a food material of any size and range.

Polyphagous animals such as elephants have the advantage of surviving even in an environment of scarcity. Availability of a range of nutrients can also be ensured by feeding on a variety of species in addition to the most preferred ones. Thus, elephants have the ability to utilise the available resources in a very efficient way. During the pinch period of summer when grasses are scarce and of low nutritive value, they go for an increased quantity of intake.

They feed a lot on the bark of various tree species. Bark feeding has been reported to be in response to deficiency in essential fatty acids such as linoleic acid in other food species and found in higher quantities in bark. Further, higher contents of minerals such as manganese, iron, copper, boron, calcium and sodium in tree barks have also been reported as reasons for the bark feeding behaviour of elephants.

Elephants are reported to consume between 1.5% (dry season) and 1.9% (wet season) of their body weight in twelve hours of feeding. There is not much studies on the mineral requirement of Asian elephants. A 3000 kg cow elephant may require 60 g. of calcium daily. An adult elephant require 75-100 g. of sodium. They need a large quantity of water. Evidences indicate a requirement of about 100 litres of water at one time and up to 225 litres in a day.

Many authors have debated on the question whether it is grazer or browser. Studies in most of the elephant ranges have indicated that they are both grazers and browsers. However, the proportion of both grass and browse species in the diet vary according to seasons. Certain authors have indicated that the foraging efficiency of elephants on grass is high (80%) compared to feeding on browse (50%). More often the selection of food species, whether it is grass or browse, depends on the

nutritive value and also the secondary toxic compounds in the plant species. The digestive system is reported to be highly sensitive to plants' toxic secondary compounds

### **Social life**

Elephant is a social animal and live in herds. The herd will have elephants of different age sex classes. The calves are protected by all the members of the herd. The herd size vary according to the season and resource availability. It is also influenced by environmental factors such as water availability, disturbance and also by other biotic pressures. Herds of even up to 62 have been reported in Asian elephants. The matriarchal system in elephants have been well established. There could be all male herds also. Most of the solitary elephants are bulls.

### **Threats**

#### **Loss/degradation of habitat**

Elephants because of their wide ranging habit require larger areas. Loss of habitats have been the major threat to the animal. Fragmentation and degradation of habitat have also affected most of the populations.

#### **Man-elephant conflict**

Man-elephant conflict has been identified as one of the major problems to be solved to ensure their survival in most of the ranges. The problem is always on the increase because of degradation /conversion /fragmentation of habitat. Crop raiding and manslaughter have been reported from several places in India. This conflict often leads to the death of the animal or at least inflict serious injuries.

#### **Population status**

Ivory is a much sought after commodity within and outside the country. Most of the populations of Asian elephants have a highly skewed sex ratio favouring females. This may range from 1:5 to 1:100 in certain cases. Such trends have been reported in the case of polygynous animals due to increased mortality of males among the calves and juveniles. Since the elephants are not seasonal breeders, it is also possible that all the females in the population could be mated by the available males. However, the genetic heterozygoity will be definitely affected. This is especially true of isolated populations with low population sizes. The selective removal of males from the population through poaching could also affect the behaviour of the animal to a great extent.

The increasing number of makhnas in most of the population have been a matter of great concern to conservationists. The long term effect of such changes cannot be predicted at present but could be not for good.

It is important that a minimum viable population is maintained in all the areas for long term survival. These population may also be ensured enough contiguous habitats. The Project Elephant launched by Government of India envisages long term survival of the species ensuring minimum

viable population, larger extent of areas, improvement of habitat, mitigation of man-elephant conflict problems and affording protection to the animal from poachers.

## **MAN - ELEPHANT CONFLICT : CAUSES AND CONTROL MEASURES**

**S.S. Bist**

### **1. INTRODUCTION**

People dealing with wild elephants know that it is generally a shy animal, avoiding human beings and loving its privacy within the forests. At the same time the elephant is also a wild and mighty animal. Its requirement of food and living space is also very large. It is, therefore, only natural that it should come in contact with human beings sometimes or the other and some problem should arise. In fact, cases of crop damage and occasional man-killing by wild elephants have been recorded since time immemorial in all elephant areas. People have also been killing or injuring elephants in defence of their life and property. But such cases used to be few and far between in the past. In the recent years, however, elephants have been observed to be straying out of forests much more frequently and causing large scale depredation in human localities.

As we know, elephant is an endangered animal and whole-hearted attempts are being made by the Government and other agencies to protect it. For the success of all such attempts, co-operation of the public is a must, but public co-operation can not be obtained in all such areas where elephants have become a serious problem for the life and property of human beings. Therefore, control of man-elephant conflict has become a very important issue for elephant management in India today.

### **2. TYPES OF DEPREDACTION**

Depredation by elephants is usually of the following types:

1. **Killing or injuring of human beings** -- such cases are mostly accidental in nature, and nervousness and confusion on the part of the elephant and the victim lead to such accidents. However, occasionally, there are some confirmed "rogue" elephants who would deliberately chase human beings and kill them. Experience shows that solitary elephants are involved in man killing more frequently than herd elephants.
2. **Crop raiding** -- Most of the depredation by elephants is in the form of crop raiding. More or less, all wild elephants indulge in crop raiding whenever they get an opportunity. Experience in the Northern part of West Bengal suggests that wild herds indulge in crop raiding only in particular months when the crop matures but cause maximum damage. On the other hand, solitary elephants visit agricultural fields almost round the year but do not cause much damage.
3. **House breaking** -- Elephants may indulge in house breaking for various reasons -- search for food grains, salt or country liquor or for rescuing their calves if they have ventured inside a house. In North Bengal, most of the house-breaking cases take place in tea gardens. Sometimes there are desperate solitary elephants who are habitual house breakers.
4. **Loss of livestock** -- Cases of elephants killing buffaloes and other livestock are reported from time to time.

### 3. EXTENT OF DEPREDAATION

**3.1** Accurate figures regarding depredation by elephants in India are not available, but the extent of depredation is believed to be very large. In North Bengal, wild elephants occur only in the two districts, viz. Darjeeling and Jalpaiguri, and records of elephant depredation are regularly maintained. The following figures would indicate the extent of the problem in North Bengal.

#### 3.2 Human casualties

<b>1986-87</b>	39	<b>1987-88</b>	46	<b>1988-89</b>	63
<b>1989-90</b>	42	<b>1990-91</b>	68	<b>1991-92</b>	54
<b>1993-94</b>	49	<b>1994-95</b>	41	--	--

**3.3 Crop damage** -- It is estimated that crops over 4000-4500 ha of agricultural land are destroyed by elephants every year in North Bengal.

**3.4 House damage** -- Approximately, 1000-1200 houses are demolished every year by elephants in N. Bengal.

**3.5 Compensation**-- Government of West Bengal pays compensation to the victims of elephant depredation. Expenditure incurred by the Government on payment of compensation during the last few years is as follows:

<b>1991-92</b>	Rs. 23.64 lakhs	(2.36 millions)
<b>1992-93</b>	Rs. 26.11 lakhs	(2.611 millions)
<b>1993-94</b>	Rs. 22.34 lakhs	(2.234 million)
<b>1994-95</b>	Rs. 21.91 lakhs	(2.191 million)

**3.6** The State Government also spends Rs.40-45 lakh every year on anti-depredation measures. Tea gardens in North Bengal also suffer great economic losses on account of house damages and reduced production due to labour problems tormented by elephant depredation.

**3.7** Considering the fact that there are only 186 wild elephants in North Bengal as per 1992 census, it can be inferred that the extent of depredation is abnormal, and the Government of West Bengal and the people of North Bengal are paying a very high price for the protection of these elephants.

### 4. IMPACT ON THE ELEPHANTS

It will be wrong to assume that only the people are the losers in this conflict with the elephants or that the elephants are enjoying the situation. In fact, condition of elephants in all conflict areas is very pathetic. Quoting from the North Bengal experience, the elephants are very much harassed-chased and disturbed constantly as they are, wherever they go. Number of wild elephants bearing injuries on account of arrows or bullets shot at them by the local villagers and tea garden labourers, is very high. Cases of elephant herds abandoning their calves are becoming common. Incidences of

poaching of wild elephants are also not uncommon. Thus the elephants are under extreme state of stress on account of man-elephant conflict.

## **5. CAUSES OF MAN-ELEPHANT CONFLICT**

It is difficult to pinpoint a single factor responsible for the conflict. Often more than one factor cause the problem. Some major causes are discussed below:

### **5.1 Habitat destruction**

In the recent years, forests have been destroyed in many areas for agricultural land, tea gardens, factories, refugee-colonies, army cantonments, roads, railways, irrigation projects etc. As a result, forests inhabited by elephants have shrunk and become fragmented. Elephants being a long ranging animal can not remain confined to a particular forest area for long. In small fragmented forests elephants come in contact with human beings more frequently than in large compact forests and thus the chances of man-elephant conflict increase.

### **5.2 Grazing**

Grazing by cattle is a serious problem in Indian forests. Cattle not only deprive elephants and other wild herbivores of their legitimate fodder but also spread many diseases among them. Scarcity of fodder may force elephants to spend less time in a forest than they otherwise do and may make them more inclined to raid agricultural lands.

### **5.3 Defective forestry practices**

Some of the practices followed by the state forest departments, such as clear felling of large tracts of forests and conversion of natural forests in to plantations of teak, eucalyptus, and other non-fodder species, have resulted in degradation of many forest areas which now can not hold elephants for a long period as in the past.

### **5.4 Lure of agricultural crops**

An elephant is a huge animal requiring 250-300 kg of fodder every day. In forests, an elephant may have to spend 16-20 hours daily to gather its food. In an agricultural land, however, an elephant gets substantial quantity of nutritious food over a smaller area with the least effort. Elephant being an intelligent animal, it is obvious that he prefers to raid over agricultural fields once he has the taste of it and more so if there is a scarcity of fodder in the forests.

### **5.5 Over exposure to human beings**

Movements of human beings in most forests of India has increased tremendously. Every day many people enter forests for grazing their cattle, collecting fodder or fire-wood, or for other purposes. Thus they come in contact with elephants more frequently than in the past. Elephant is basically a shy animal and tends to keep away from human beings. But over exposure to human beings makes elephants lose their inherent fear of man and makes them desperate.

**5.6** It can, therefore, be seen that man himself is the cause of conflict with elephants in most of the cases.

## **6. CONTROL MEASURES**

Measures for controlling man-elephant conflict can be divided into two categories, viz. the short term measures and the long term measures. Short term measures aim at providing immediate relief to the people against depredation by elephants. Long term measures aim at removing the factors responsible for elephant depredation and at creating ideal living conditions for elephants within forests. As regards short term measures no single method is effective in all cases against all elephants. Elephants are known to exhibit remarkable intelligence in finding out the limitations of various methods and adapt themselves accordingly. What, therefore, is required is constant improvisation of various methods keeping the psychology and physical capabilities of the elephant in mind. Both short term and long term methods should go hand in hand if the problem has to be resolved fully.

### **6.1 Short Term Measures**

**6.1.1** Driving away elephants physically using searchlights and crackers. (In North Bengal, Forest Department has engaged "Wildlife Squads" to help the people in chasing away elephants from localities.)

**6.1.2** Destruction of confirmed man-killers ("Rogues").

**6.1.3** Capturing of elephants to control their population.

**6.1.4** Use of trained elephants (*koonkie*) to chase away wild elephants.

**6.1.5** Tranquillising the problematic elephants and relocating them to safer places.

**6.1.6.** Use of barriers (Elephant - proof trench, watch towers and electric fencings).

### **6.2 Long Term Measures**

#### **6.2.1 Habitat Development Works**

Felling of natural forests in India is now banned under law. In many states, forest departments have taken up programmes for replacing pure plantations of teak, eucalyptus etc. with indigenous fodder species. In North Bengal, bamboos and other fodder species liked by elephants are being planted on a large scale in various sanctuaries and national parks and even outside to improve the quality of forests and induce elephants to spend more time inside forests.

#### **6.2.2 Eco-Development Works**

Eco-development works are being undertaken in villages surrounding various national parks and sanctuaries in India. The objective is to reduce the dependency of the people over forests for grazing, firewood and other requirements and thus, to control biotic interference in forests. Eco-

development works also aim at improving the relationship of the forest staff with the local people and to ensure the involvement of the people in the protection of forests and wildlife.

### **6.2.3 Corridors**

In some states in India, corridors linking one forest inhabited by elephants with another forest have been identified. These corridors would be suitably improved to ensure adequate cover and fodder, and human interference would be removed from there. It is expected that these corridors would facilitate free seasonal movement of elephants without coming in to conflict with human beings.

## **7. PRECAUTIONARY MEASURES**

Experience tells us that the extent of depredation by elephants can be greatly reduced by observing certain precautions and by taking preventive measures. An analysis of the pattern of depredation and the psychology of the elephants involved, would suggest many such measures. For example, in North Bengal, the Forest Department has been recommending the following precautionary measures to the villagers and the residents of tea gardens:

**7.1** Tea garden authorities have been advised to get their labour colonies electrified and to provide street-lights at the entry points of the elephants in to the garden. Experience tells that wild elephants in general are shy of electric lights. Moreover, people can protect themselves against elephants in a better manner in the presence of electric lights than otherwise.

**7.2** Local people are also warned against storing "haria" - a rice based country liquor, in their houses because elephants are believed to be fond of this and are attracted by its smell. People are also warned against moving around in intoxicated condition after sunset because they can not protect themselves against the elephants.

**7.3** Villagers are advised not to grow bamboos, bananas, jack fruit and all such plants very close to their houses as may attract elephants. Villagers are also advised to keep the hedge around their houses short so that they can get a better view of the approaching elephants.

**7.4** People are also advised to spray phenol or use any other foul smelling substance on the walls of their houses. It is believed that elephants, who have got an acute smelling power, keep away from foul smell.

**7.5** People are also advised to stay put within their houses rather than run helter skelter when an elephant is around. They are much safer indoors than outdoors where they may accidentally run into the elephant and get killed.

**7.6** It has been observed that wild elephants have more inclination to break houses with walls white-washed or painted with bright colours than those with green, ochre or earth coloured walls. Tea garden authorities are advised to keep this fact in view while constructing or repairing labour huts.

**7.7.** In areas where crop depredation by elephants is a regular problem, villagers are advised not to grow paddy or maize but to go for jute, potato and any other crop which is not eaten by elephants.

**7.8** People are also warned not to cause injury to an elephant using arrows, bullets, fire or any other means. An injured elephant is much more dangerous and may turn in to a habitual man-killer.

## **8. TRAINING AND PUBLICITY**

As stated earlier, man-elephant conflict is basically a man-made problem. Therefore, to solve the problem man, rather than elephant, should mend his ways. The problem can be greatly reduced if people stop disturbing forests and take suitable precautionary measures. It is possible that man and elephant can live in peaceful co-existence. This can be achieved through intensive publicity among the people and by providing suitable training to them. In North Bengal, the Forest Department has already initiated such a publicity and training programme.

## **ELEPHANT CAPTURE AND TRAINING IN KERALA FOREST DEPARTMENT**

**Dr. Girinadhan Nair**

### **History of elephant capture**

The Indian elephant has been declared as a Schedule - 1 animal, by the Wildlife Protection Act, meaning, it is a highly endangered species. Wild elephants are facing the threat of extinction due to poaching and habitat destruction. In 1973, the Indian government officially banned elephant capture, to prevent the depletion of wild elephant population. However, elephants that encroach into human habitations are captured by the forest department.

In the past, elephants were abundant in forests and were captured in large numbers, to be trained to suit human needs. There have been references in an ancient Greek text, by Megasthenes, as early as 350 B.C., about elephant capture and training. In India elephant capture was carried out by various methods and they were: Pit method, *Kheddah*, Noose or trap method, Decoys and spearing. Various regions of India, practised various methods of capture.

### **Pit method**

In Kerala, elephant capture operations were carried out by the pit method, during the months of July, August, and September, which coincides with the S. west monsoon. Elephant herds, while travelling in search of waterholes and fodder, form regular paths or 'walks', in the forests. The forest guards and watchers, who tracked these 'walks', would inform the concerned forest official, such as Range Officer and pits would be dug along these paths. Elephant capture in Kerala, was carried out in some important forest ranges like Konni, Kodanadu, Muthanga, Nilambur, Parambikulam (forest), and Chetalathu.

The pits were arranged in sets, where a set consisted of 3 pits, arranged in a triangle. 40-60 such sets of pits were dug, in a range alone. The dimensions of the pits were as follows

Distance between each pit, in a set - 20-25 feet. (7 - 8 mt)

Diameter between each pit - 12 feet (4 mt)

Depth of each pit - 12 feet (4 mt)

The pits were narrow, or tapering towards the bottom, to minimise the intensity of injury, caused to the elephant, due to the fall. While an elephant were falling, its body would strike against the sides, thus minimising the shock, during the fall. While preparing the pit, the mud that had been dug out, was removed far away from the pit. The pits were camouflaged with vegetation. Rafters were placed across the pit, vertically and horizontally, and dried twigs and leaves were laid out, across the top. The camouflage had to blend with the rest of the surroundings. Since the pits were dug during September and March, the dried leaves falling from nearby trees covered the area naturally and it became impossible even for humans to identify the pits.

The site for digging the pits had to be chosen very carefully keeping in mind the following points.

- Rocky areas had to be avoided, as the elephant could be severely injured during the fall.
- The earth had to be loose and soft to make it easier for digging.
- There had to be several strong trees around the area, to chain the elephant and to fasten ropes, when the elephant was being taken out.
- Ample water supply was essential for the *koonkie* elephants assisting the operation.

The pits were lined inside with grass from the forest, about 6 feet deep. The grass and brush wood was renewed every two weeks, as they dried up quickly in summer. Every morning the watchers or guards inspected the pits for trapped elephants and reported to their respective senior officers. Not all elephants that were trapped were captured. They were selected on the basis of their height, age and size. Elephants between 6 <sup>1</sup>/<sub>2</sub> - 7 <sup>1</sup>/<sub>2</sub> feet height, sub adults and cow elephants were preferred, as they were considered easier to handle and train. Larger tuskers, cows with very young calves and aged elephants, were released back into the forest. The wild caught had to be smaller than the *koonkie* elephants.

To prevent elephants escaping, huge trees were chopped down and laid across the pit. Special ropes were prepared, from the bark of the *Vakka* tree, (*Streculia villosa*), to noose the wild elephant in the pit. Fresh ropes were prepared for each operation, as their quality deteriorated with time. The number of *koonkies* to be used, depended on the size of the wild caught. No more than 3 *koonkies* were necessary for a capture operation.

The mahouts offered prayers to the mountain Gods, before removing the elephant from the pit. The wild elephant was noosed by experienced mahouts. The elephant was noosed on both the hind feet and the neck. The elephant's neck was measured in an interesting manner. One of the persons involved in the capture would attempt to distract the elephant using a white cloth, while the others would insert a long pole into the pit, to measure its height. The girth of the neck is calculated as 7/8 th of the height and a noose of the same dimension, was made. A peg was inserted between the knot on the noose, to prevent it from strangling the elephant.

Applying the noose required skill and courage. It was applied using bamboo poles or by lassoing. A second noose had to be applied, which had to run under the first one. Both these nooses had to be connected to the peg around the first noose, with a small knot called the *cherukettu*. The *cherukettu* was tied by experienced mahouts, who had to lean over the pit. A knot was tied around his waist, the other end of which was held by strong men.

To bind one of the hind legs, the noose was placed on the floor of the pit and was tightened around the elephant's legs, as soon as it placed its legs accidentally over the noose. A second noose was tied around the other leg, after the elephant emerged from the pit. The *koonkies* held the free ends of the ropes, around the hind leg and the loose ends of the two ropes, from the neck on either sides. The elephants were assisted out of the pit by means of billets, which were added to the pit after noosing. The billets had to be added slowly and carefully, to prevent the elephants from escaping.

As soon as the elephant was out, the capture team proceeded to an even ground preferably, along the banks of a river. The elephant had to be given plenty of water to drink, and had to be cooled by periodical sprays.

### **Elephant kraal**

Some elephant *kraals* continue to exist from the old days and are used to house weaned calves or ailing elephants. The elephants were brought to the camp site and enkralled, with the assistance of *koonkies*. The entire *kraal* can be divided into six sections, of 12 square feet each, with one single roof. The wood of *thambakam* was used to build a *Kraal*, because it is very strong and could not be easily destroyed, by the elephant. The roof was built about 20 feet high from the floor.

### **Elephant training**

The training takes place in 3 stages. Elephant training is still carried out for calves and wild caught elephants in some elephant camps.

- Training within the *Kraal*.
- Training outside the *Kraal*.
- Training to perform logging operations.

#### **Training within the *Kraal*.**

After the elephants were enkralled, two mahouts were assigned to train it. They first treated the elephant for bruises sustained, from the fall into the pit. The medicinal preparation used, was a mixture of several herbs and this was splashed onto the body. The mahout tried to build up a relationship with the elephant by giving vocal commands, to familiarise the elephant with his voice. The commands were repeated constantly and the elephant was rewarded with tit bits of food or verbal approval, when it obeyed the commands. During the initial stages of training, the mahouts used only the stick, to restrain the elephant.

The mahouts were expected to spend lots of time with the elephant to develop a bond between him and his elephant. After a certain period, when the mahout felt comfortable enough to trust the elephant and vice versa, he would try and place one leg inside the cage and continue training in this manner. Later, smaller cages were built within the actual *Kraal*, to let the mahout get closer to the elephant and enable him to safely clean the *Kraal*. During this period, the mahout had to be wary of the elephant's movements, for his own safety. Towards the end of the training, the mahout had to fasten ropes and chains, on the elephant to familiarise it with the idea of being chained.

#### **Training outside the *Kraal***

With the help of koonkies, the elephants were taken out of the *Kraal* and walked to the river, to be familiarised with scrub baths. This was carried out every morning for two weeks, until the elephant was accustomed to the new environment outside the *Kraal* and also to being bathed, by its mahouts. The walk to the river also familiarised the elephant, with the sounds and sights of civilisation. The mahout had to constantly reassure the elephant and help it get over its fears.

### **Training to perform logging operations**

Training elephants to perform timber hauling operations is a complex job. There have to be at least two mahouts or trainers, during the training period, which may last for two years. Training elephants to perform timber hauling operations is a complex job. There have to be at least two mahouts or trainers, during the training period, which may last for two years.

### **Uses of elephants**

1. Elephants in the past, were used for battles and wars. With the invention and use of guns and canons, elephants ceased going for wars.
2. Elephants are used for various religions events in India. In Kerala they are an important part of the temple activities like [ezhunnallippu](#).
3. Elephants are used in logging operations. In the forest types of Asia, where the land is uneven and sometimes very steep, elephants are very useful to carry out logging.

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## **ELEPHANT CAPTURING IN NORTH-EASTERN INDIA**

### **Parbati Baruah**

1. Elephants are captured in Assam and the other North-Eastern states either by "KHEDDA" or "MELA SHIKAR".

### **2. KHEDDA OR GARH-SHIKAR**

There are two variations of Khedda as practised in Assam, viz., the Pung Garh and the Dandi Garh.

#### **2.1 Pung Garh**

"Pung", in local dialect, refers to a natural source of salt used by wild animals. In this method, a big enclosure (called stockade) of stout wooden poles is erected at a convenient place near a natural salt-lick, but away from the path taken by the elephants to reach the saltlick. The stockade is suitably camouflaged from inside as well as outside. The approach to the stockade is shaped like a funnel (called "Rangi" in local dialect) by suitably dressing the nearby forests and by using wooden posts and brushwood if so needed. Persons atop watch towers keep watch over the movement of elephant herds to the saltlick. As soon as a herd starts its return journey from the salt lick, it is obstructed on the way and driven carefully by shikaris and "beaters" towards the "rangi" using crackers and other noise-making instruments. As soon as the herd enters the stockade, its gate is slammed shut, using a trapping mechanism. A wide trench runs inside the stockade along the wall to dissuade the elephants from using their full might to break through the stockade. Help of koonki

elephants is taken to noose and bring out the wild elephants selected for domestication. Usually big and old elephants, pregnant elephants or those with suckling calves and elephants below 4 feet of height are permitted to escape.

## **2.2 Dandi Garh**

In local parlance, "Dandi" refers to the migratory path of elephant herds. In this method, a stockade is made at a convenient place on the migratory route of the elephants just before their seasonal movement starts. A herd is located when still at some distance from the stockade and then driven vigorously from behind till it runs into the stockade and gets trapped.

## **3. MELA SHIKAR**

In local parlance, "mela shikar" refers to hunting in the open i.e., capturing of elephants in the forests without erecting a stockade. Essentially the method involves the chase of wild elephants by using trained elephants (koonkies) and noosing them when the opportunity arises. In fact, mela shikar is much more popular in N.E. India than the khedda. A variation of mela shikar is known as the "Gazali Shikar". Gazali refers to the young shoots of grasses that sprout up during pre-monsoon showers in May-June. Elephants are very fond of gazali and are attracted towards grassy patches wherever they are and provide a good opportunity to the mela shikaris.

### **3.1 Preparation For Mela Shikar**

**3.1.1** Mela shikar is usually practised in winters (October to March) with the exception of Gazali shikar which, as stated above, is carried out in May-June. Mela shikar is not done during the monsoon due to practical difficulties. The preparations for mela shikar, however, start much in advance.

**3.1.2** A standard team for mela shikar consists of a koonki elephant, a phandi (an expert on noosing a wild elephant), a mahout and a kamla (i.e. a grass-cutter). Considering the uneven terrain and dense forests in N.E. India, comparatively smaller (7.5 feet to 8 feet in height) and swift moving elephants are preferred as koonkies. Cow elephants and Makhnas (tuskless elephants) are preferred to the tuskers. Koonkie elephants are specially trained to chase the wild elephants, help in noosing them and drag them to the depot. They are particularly trained to follow "foot commands" from their mahouts and to move silently during the entire capturing operation. The phandi and the mahout must have a complete understanding with each other as well as with the koonkie under their command. It is the duty of the kamla to look after the feeding and other requirements of the koonkie back at the camp.

**3.1.3** Number of mela shikar teams is selected depending upon the number of wild elephants proposed to be captured -- usually one team of shikaris can take care of only two or three wild elephants during the season. Some big koonkies including tuskers are also required for handling the captured elephants at the depots and for imparting training to them.

**3.1.4** In N.E. India jute ropes are used for elephant capturing as these cause minor and easily curable injuries to the elephants. Before the actual operation, ropes of different thickness, lengths and knots are prepared and kept in readiness.

## **3.2 Operation**

**3.2.1** As soon as an elephant herd is located, it is given a chase by two or more koonkies. The objective is to wear out the elephants or to force them towards a hilly region or a big river or any other area where their movements are restricted. A target elephant (usually in the height range of 5.5 feet to 7.5 feet) is selected and attempts are made to isolate the same from the herd. Once the target elephant is isolated, the phandi throws the "phand" (noose) over the neck of the elephant and tries to restrain it with the help of the koonkie.

**3.2.2** During the entire operation, the phandi occupies the front seat on the elephant and the mahout controls the koonkie from its back. He also keeps watch on the other wild elephants when the phandi is busy with his quarry.

**3.2.3** The captured elephant is then dragged to the training depot with the help of one or two koonkies. The captured elephant is treated for injuries, if any. It is handed over to the training koonkies. To begin with, two koonkies are needed to handle the wild elephant but after 8-10 days of training, just one koonkie is sufficient. The wild elephant remains at the depot for 3-4 weeks during which period, it is familiarised with human touch and voice through different rituals involving caressing and a recital of folk songs. It is also taught to follow the following four commands, viz., Dhaat (i.e. stand still), Agait (I. e. walk forward), Pichhu (i.e. walk backward) and Cheyi (i.e. turn left or right). The wild elephant can now be handled without the help of koonkies and it is sent to the regular elephant camp where further training is imparted.

## **4. Comparison of Mela Shikar with Khedda**

As stated earlier, mela shikar is more popular in the N. E. India than the khedda. Khedda involves very large expenditure and can be organised only near a saltlick or a known migratory path. Success rate of khedda is very low as compared to mela shikar. Mela Shikar is relatively cheaper and offers much more liberty regarding the area of operation, but it is not suitable for capturing elephants of big size (say, of the height above 7.5 feet). Mela Shikar involves considerable risk for the phandi and the koonkie and cases of their getting injured or even killed are not uncommon. There is also a chance of the captured wild elephant getting suffocated if the knot of the noose is not correct. All said and done, mela shikar has become an art and a tradition with the people of N.E.India.

# SECTION VII

## MISCELLANEOUS FACTS

**Elephant Trade in India**

**Purchasing Elephants - Tricks of the Trade**

**Auspicious and Inauspicious Signs**

**The Image and Profession of Mahouts in North-eastern India**

**Evolution of Elephants - The Mythological Story**

### ELEPHANT TRADE IN INDIA

**Dr. Jacob V. Cheeran**

The significance of elephants as beasts of burden and a cultural symbol continues to last even today. Kerala, Tamil Nadu, Karnataka, Bihar, Uttar Pradesh, West Bengal and Assam are some of the states with largest collection of captive elephants, in India. Of these, Kerala is perhaps the only state which continues to buy elephants, on a large scale for cultural reasons. In Kerala there is a great demand for tuskers during festivals. In the absence of a state, breeding programme and due to the ban on elephant capture from wild, the local buyers buy elephants from neighbouring states of Karnataka, Tamilnadu or from North and North eastern India. The greatest market for captive elephants in India is at Sonapur, in the state of Bihar. Sonapur is a town on the banks of river Ganges. In connection with Buddha Purnima, or the full moon, a livestock fair is held every year at Sonapur. People from various parts of India gather here to trade in livestock. Elephant trading is also carried out during this time. Hundreds of elephants, from various parts of N. and N. Eastern India, collect at Sonapur, during the fair.

It requires lot of experience and intelligence to choose the right elephant, from the group. The buyer must choose an elephant suited to the nature of work to be performed. The temperament, period and duration of musth, body structure, age, and health are some factors to consider before purchase. Beauty or external appearance is the priority, for some buyers. In Kerala, elephants with certain external features such as long trunk, large ears, prominent twin domes etc are considered attractive. Most elephants from N. India do not have those characters and are hence branded as unattractive. Thus the general opinion among Keralites is that elephants from N. India are unattractive. The author is of the opinion that, beauty is a subjective issue and ‘...lies in the eye of the beholder’.

### PURCHASING ELEPHANTS - TRICKS OF THE TRADE

**Dr. V. Krishnamurthy**

Most elephants appearing at Sonapur, are ridden with physical defects or illness. These elephants would normally fetch low prices, so the owner or broker tries to hide these defects from prospective buyers. The elephant trade is a very tricky business and one can be easily deceived, by clever traders. Discussed below are a few tips to buying a good elephant and making a reasonable bargain.

#### **I. Health and body condition :**

1. **Vision:** In order to ensure that an elephant has proper vision, it must be approached from both sides ( left and right). Elephants that are blind or with poor vision, are usually more sensitive to their surroundings. An elephant that is blind on its left eye will be very conscious of movements happening on the left side. It may react violently if approached from the left side. Eyes must be clear without patches. They should be dark brown or honey coloured.
2. **General appearance:** A healthy elephant constantly fans its ears, swishes its tail and trunk and shifts its weight from one feet to another. On the contrary, if an elephant remains motionless, it is an indication of some physical disorder.
3. **Fodder and water consumption:** Healthy elephants feed continuously throughout the day. A lack of appetite is an indication of internal disorder.
4. **Composition of excreta:** Dung and urine should be clear. The dung should be of the right consistency and expelled at regular intervals.
5. **Motility of limbs:** Elephants must be checked for lameness. They must be made to walk forwards, backwards, take right and left turns to check motility of legs. They should also be made to lie down and sit up. If the elephant makes more than two or three swings of its legs and also groans while trying to sit up, it is an indicator of disability and pain. Forelimbs may appear curved inwards, due to abuse by mahouts.
6. **Tusks:** Tusks may be infected. False tusks are fixed during the trade, in order to deceive the buyer. Tusk can be inspected for pus or infection by inserting a finger into the region around the tusk. Infected tusks also produce an odour.

## II. Temperament

7. The temperament of an elephant is an important factor irrespective of the nature of work it is suited for. The buyer must observe the elephant, from a distance, in the presence and absence of its mahout. He could also consult experienced people for a second opinion. There is also a practise of drugging elephants with a violent temperament. Thus the elephant may appear docile during inspection.

## III. Other factors:

8. The elephant must also allow its mahout to mount via the front and hind legs. Some elephants may not allow people to ride on its back. The elephant must also follow the foot commands of the rider. Elephants display stereotypic movements on chains, such as weaving of head, rocking back and forth, swinging one feet around, etc, must be avoided. If these actions continue even on being unchained, the elephant should be avoided.
9. An elephant with 17 nails is considered inauspicious. Traders sometimes place an artificial nail made of sea shell to cheat the buyer.
10. Dark pigmentation on the tongue and the palate are considered inauspicious.

## IV. Purchasing timber elephants: The following are the desired qualities for a timber elephant.

11. Neck must be short. Such animals are called pig - necked, in local parlance.
12. Animal must not be tall and lanky. Limbs must not be long.
13. Animal must appear strong and fleshy with feet placed firmly on ground.
14. Knee must be broad

15. The callouses from work or laying down must not be prominent.
16. Spinal ridge must not be visisble.
17. Tail must be broad, long and fleshy
18. Temporal region must be convex without depressions
19. Bones on the briskette (chest) must not be visisble.
20. Tongue must be pinkish in colour.
21. Skin must be elastic with several wrinkles.

## AUSPICIOUS AND INAUSPICIOUS SIGNS

### Dr. K.C.Panicker

In Kerala, as in other states, the presence or absence of certain physical characters determine the quality of an elephant ie its temperament and disposition. Based on these traits, it is also judged if the elephant is auspicious enough to be owned or purchased. Listed below are a few of them

- A dignified look with a raised head and low back.
- The fore and the hind feet should be placed straight and firm on the ground. The legs must be straight without deformity.
- The twin domes on the head (*thalakunni*), should be big, raised and evenly separated. They must not be close to each other
- The forehead bump (*vayukumbham*) must be broad and projecting forwards.
- The portion on the face, between the eyes and the tusk (*cheela*) must be compact. This portion must be long and broad. In cow-elephants this region is less pronounced.
- The eyes must appear clear, with the colour of honey and should be moist. The pupils must be dilated. Red eyes in elephants indicate an aggressive and angry temperament. This is also observed during musth. Eyes may turn red due to injuries. One must be wary of elephants that have a fixed gaze.
- The ears must be large. While being fanned, they must strike with a loud flapping sound, in the front. Small ears are not desirable in elephants.
- The tusks are decisive in judging an elephant 's appeal. They may be formed in several ways such as, converging in the front, diverging, or curved upwards, etc. The ideal is that, the tusks should grow downwards, rise up, and then be evenly separated. The colour must be that of butter or sandalwood.
- The trunk should be fleshy, broad , long and trailing on the ground. The tip of the trunk (*thunikkai*), must be long, triangular and strong. Injuries to the trunk, especially the *thunikkai* may disfigure the elephant.
- The temporal region, (*kannakuzhi*), must be swollen and fleshy. If this region appears depressed due to loss of fat or flesh, it can be assumed that the elephant is tired or weak.
- The back must slope downwards. The bones of the back must be pronounced and the area where the mahout sits (*irikkasthanam*), must be broad and fleshy ; otherwise it will not be a comfortable ride. This seat of the mahout, is above the forelegs or the scapular bone.
- The body must be long and the stomach must always be full and big.
- The tail must be long and end broadly into a fleshy region (*vaal kudam*). There should be ample hair on the tail. The tail must be long enough to touch the ankle, but not too long to trail on the ground, and should be devoid of twists or turns.

- Elephant usually have 18 nails; five each on the forelegs and four each on the hind legs. Rarely some have 20 nails, which is considered very auspicious. Indian mythology claims that Airavat, the elephant of Lord Indra, possessed 20 nails. Elephants that possess 16 nails are considered inauspicious for individuals to own, but institutions like temples could keep them. The nails must be clear and smooth without cracks and must appear pronounced like the shell of a tortoise. Elephants used for labour and physical activity may have broken nails.
- The skin must be jet black in colour ( like black teak or a group of rocks). In *Malayalam* elephants are called *kariveeran*, meaning the 'black hero'. The skin must be resilient. Lack of resilience is an indication of dehydration.
- When multiple hairs arise from a single root, it is considered an indicator of long life, and is a good sign. These occur usually below the eye or between the eye and the trunk, or on the sides of their chin.
- If the insides of the mouth or the upper surface of the tongue is black , the elephant's character is considered unpredictable.
- It is inauspicious to have black markings on the penis.
- The elephant makes a gurgling sound, from the throat, on seeing its favourite mahout or owner. Similarly it may excrete dung or urinate, to express its happiness. All these are considered as good signs. If the elephant remains motionless (without fanning its ears), when approached, then one must be wary of it.

## THE IMAGE AND THE PROFESSION OF MAHOUTS IN THE NORTH EASTERN INDIA

### Parbati Baruah

1. Usually the mahouts in the N.E. India come from among the tribals and the so called "low castes". But the Muslims and the upper caste Hindu mahouts are also not uncommon. Until recently, there were many families in Assam which produced generations after generations of mahouts.
2. Elephants have been domesticated in the N.E. India since time immemorial and both the elephant and the mahout have become a part of the folklore and the folksongs. Stories of brave and expert *phandis* (noosers) and mahouts are passed on from generation to generation. In the rural Assam mahouts are looked upon with awe and admiration and it is not unusual for village belles to fall in love with young mahouts.  
An average Assamese mahout is a jolly, good natured person an accomplished folk singer and is very much in demand in local functions and ceremonies. With his capacity to control such a big and powerful animal as elephant, mahouts are often associated with supernatural powers and invited to act as "faith healers" or "*Ojhas*". Some of them practise witchcraft. Many of the mahouts have made a name for their knowledge of medicinal herbs.
3. Grass cutters, mahouts and *phandis* form their own closely knit society - having their own rules, regulations and code of discipline. They have their own informal "university" and their own system of "examination". A mahout becomes a "*phandi*" after passing a rigorous test conducted by other *phandis*. Only a few *phandis* can aspire to become "*Baro - Phandi*" which is equivalent to a master's degree in elephant management. *Phandis* and *Baro-Phandis* derive maximum respect in the society of mahouts and they are also held in esteem by the elephant owners and government officials. In the elephant catching operation in N.E. India, *phandis* and *Baro-Phandis* are the key persons and they are often known to dictate their own terms.

- Besides the Forest Department, there are hundreds of private persons owning elephants in the N.E. India. Given the typical terrain of N.E. India, elephants are going to stay as a means of transportation, logging, tourism and forest protection. As such, demand for good mahouts and *phandis* will always be there.

## EVOLUTION OF ELEPHANTS - THE MYTHOLOGICAL STORY

**Dr. K.C. Panicker**

Elephants are worshipped and respected almost all over India, by the Hindus. Indian mythology contains several stories about them. There is one such story about their origin. *Lord Brahma*, created elephants with his divine powers of creation. At first, he rolled up some loose soil, into a sphere. He chanted some *Vedic mantras* and the mud ball acquired divinity. This divine sphere was consumed by Aditi, a *Devadasi* or celestial beauty . After a gestation period of 1000 years, Aditi delivered the sphere, and it split immediately into 2 halves. Brahma took the two halves and transformed it into elephants. The male was named Airavat and the female, Abramam. Both these elephants had white skin, 4 tusks and a pair of wings. It is believed that these two are procreators of all elephants that are living. These divine elephants were very strong. The Gods in heaven, thought it would be good to have a few more to protect them against demons. Lord Brahma therefore created 7 more pairs of elephants. These seven pairs of elephants along with Airavat and Abramam were posted at the 8 entrances to heaven as guards. They were collectively called as *Ashtadikpalakas*, meaning 8 divine guards. The *Ashtadikpalakas* were,

Males	Females
Pundareekan	Kapila
Pushpadantan	Tamarakarni
Vamanan	Angana
Supradeekan	Anupama
Anjanan	Anjanavati
Sarvabhowman	Subradanti
Kumudan	Penkala
Airavatam	Abramam

The elephants became arrogant with their newly acquired status and powers. They misused their powers to annoy and disturb *rishis* (saints) who were meditating. The outraged rishis cursed the elephants which deprived them of their wings and one pair of tusks. One of the *rishis* also banished the elephants from heaven and ordered them to live on earth there after. Before leaving heaven, the elephants requested Lord Indra, (king of heaven), to arrange for a physician , who would treat and take care of them on earth. In response to the request, Brahma, created an *Apsara* or celestial beauty named Gunavati. Gunavati was very proud of her looks and this displeased Indra. He turned her into a cow elephant and banished her from heaven to earth. Gunavati was however granted that she would be redeemed of her curse, if she consumed the semen of Samagayana *rishi*. She also had to produce his child before she could return to heaven.

Gunavati thus lived on earth, near Samagayana *rishi's ashram* (camp), as a cow elephant. One day by luck and accident she was able to consume the *rishi's* semen and became impregnated with his child. A child (boy) was born to her, after 1000 years of gestation. She abandoned the boy in the jungle, and left for heaven. The boy was adopted by the elephants and was named Palakapya. Palakapya grew up among elephants and as he grew older, also became their caretaker and physician.

As years went by, the elephant population continued to grow in the jungle. They began to encroach the nearby villages and terrify the human inhabitants. King Romapada, of the kingdom of Champa, was distressed by the misery of his subjects. He ordered the capture of all the elephants around the jungle. Palakapya was upset by this incident and he asked the king to release his elephants. He also assured the king that they would not cause any more trouble to people. The king was impressed with Palakapya's love for elephants and released the elephants immediately. Palakapya returned with the elephants to the jungle. He then wrote the [Sanskrit](#) text, *Hastayurveda*.

This text discusses the various elephant diseases and *Ayurvedic* treatments to cure them. It is believed that Palakapya, wrote the book himself, based on his experiences with treating elephants during his life. The book is in *Sanskrit*, and is not easily understood by lay men. A few *Sanskrit* and *Ayurveda* scholars are attempting to translate the book into *Malayalam* and later into English.

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# GLOSSARY

Word	Definition
Ankus	Driving hook or goad
Brahmin	Upper caste Hindus of India
Chattakaran	First mahout or the mahout in command of the elephant
Ezhunnallippu	Temple festivals
Irikkasthanam	Rider's seat on elephant back
Jaggery	Unrefined sugar from suger cane or coconut
Kannakuzhi	Temporal region
Kettiazhikkal	Process of bringing an elephant under a mahout's control
Kraal	Wooden cage used to train wild elephants and calves
Malayalam	Language spoken in the state of Kerala
Marmam	Sensitive point on elephant's body
Moda	Juvenile musth
Pilkhana	Elephant stables. In North and North Eastern India, elephants are housed in stables
Sanskrit	Indian Language and considered to be the root of almost all Indian languages. All ancient Indian texts are in Sanskrit
Thotti	Driving hook or goad
Thunikkai	Finger like tip at the end of the trunk
Vadi	Short stick
Vakka	Logging rope
Valiya kol	Long pole
Vayukumbham	Forehead bump