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A Scientific Investigation of the Population Status, Management and Welfare Significance

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ANCF
ASIAN NATURE CONSERVATION FOUNDATION

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World Society for the Protection of Animals

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PREFACE

Elephants in circus captivity constitute 2% of the captive population in India and have been a source of interest, recreation, glamour, and often of pity and anger. Detailed investigations of the welfare of elephants in circuses have been documented in western countries. However, no attempt has been made to scientifically review their care and welfare in India. For this study, ANCF, CUPA and other partner institutions have collected data on specially designed datasheets on actual living and working conditions of these animals. The data has been processed, graded and analyzed along parameters that have been found most significant in the keeping of captive elephants taking into account their ecological, behavioural and welfare needs. The collection of data was always challenging considering the negative attitude of the circus management. Absence of records or documents added to the difficulty. However, efforts have been made to provide as much insight as possible within these limitations.

The report covers five sections; the first is based on all seven circuses, and includes observations on 31 elephants. Parameters common to all the circuses were considered and the data processed for understanding the overall status and management of elephants and their handlers, the associated welfare parameters and their significance. The second provides insights into the study of a circus which was observed while it was performing in Andhra Pradesh. This circus has five elephants; data on 32 parameters for elephants and 12 for handlers were collected and processed. The results are reported and the findings discussed. The third section investigates on another circus which was observed while being stationed in Bangalore city. This circus covers Karnataka and some parts of south India for performance. It has seven elephants, and 25 parameters for them were considered for data processing and the results and other insights associated with it are presented. No ratings were given for handlers as not enough information was available.

The fourth section covers elephants from four circuses that were observed in Maharashtra while performing shows. Data on 42 parameters for elephants and 10 for handlers were processed and the findings are presented here. The fifth section covers a single female elephant kept in a circus in Kerala and covers 30 parameters. The status and management of elephants and their handlers, and the significance of welfare parameters were studied observing the parameters such as, population status of elephants, their source, purpose of keeping, shelter type, shade type, water availability, physical exercise, free-ranging or chained status, opportunity for social interaction, observed behaviour, occurrence of stereotypy, nature of work, food provisioning, reproductive status, health veterinary care, availability of veterinary doctor and experience, maintenance of records and mahout/cawadi welfare status.

This report, which would be of use to government agencies, researchers, policymakers and elephant enthusiasts, helps to focus attention on the conditions in which elephants are maintained in circuses. It points to the urgent need to change and improve living conditions of these magnificent animals.

ACKNOWLEDGMENTS

Section 1:

Captive Elephants in Circuses - Management and Welfare

EXECUTIVE SUMMARY

Circuses have a long history of using performing animals, both wild and domesticated. The animals are trained or conditioned to exhibit specific behaviours with no option to do otherwise.

This report is based on the observation of 31 elephants belonging to a sample of seven circuses (out of 15 registered Indian circuses with a reported total of 65 elephants). The study of circus elephants and their handlers was needed due to insufficient information currently available on their physiology, welfare and management status which was paralleled by lack of information on their mahouts and handlers.

The circuses were surveyed by recording information on space, facilities, manpower and funds. The main objective of the investigation was to evaluate the living conditions of the animals, their physiological, behavioural and health profile; and the divergence of these factors in the circus environment, as compared to elephants in the wild.

Apart from a detailed investigation of the welfare aspects, each of the recommended parameters was rated on a scale of 0-10 with 10 representing living conditions closest to that of an elephant's natural environment and 0 representing bad and unnatural conditions in relation to that parameter.

Rating values were graded in the following manner:l
- 0.0 to 2.4 : Bad
- 2.5 to 4.9 : Poor
- 5.0 to 7.4 : Moderate
- 7.5 to 10.0 : Satisfactory

The results of this investigation showed 95% of the animals were either transferred, purchased or gifted, reflecting ratings of 2.9/10.0 for these circuses.

All animals in circuses are kept for commercial use. When profit is the primary motive, then every single aspect related to the welfare of the animal is compromised. For example, constant shifting and transfer of elephants to different locations for economic gain sacrifices most aspects of welfare and is a source of chronic stress due to unfamiliar and unexpected surroundings.

Shelter type provided is unnatural, with absence of even semi-natural conditions. The mean rating for shelter types in all circuses is 2.5. The shelter was usually a tent pitched where the circus was performing within which the elephants were confined for the entire duration of their stay. The tents are fixed, with limited space available and are usually close to human habitation, high traffic density, subject to extremes of temperature and under conditions of water scarcity and lack of hygiene.

All circus locations lacked availability of basic necessities such as a water-body to take care of temperature regulation and behavioural enrichment activities (play, socialization, bathing or wallowing in the mud essential for the animal's maintaining a healthy and protective coating to repel flies/insects). Provision of running water was also absent, with restricted access to water. Mean rating for 'drinking water source' and 'bathing water source' were 2.0 and 1.8 respectively with all the values ranging from 1 to 3.

The shelter also formed the resting, feeding and sleeping place, implying no change in tethering sites resulting in a corresponding lack of basic hygiene. Unvarying confinement may lead to expression of abnormal behaviour like repetitive movements or stereotypy, etc.

Space (shelter) in this context is defined as an ecological space as opposed to structural space, which should take care of the day-to-day needs (food, water and social interaction) of a species like elephants with minimal constraints imposed. The life of elephants in circuses is in stark contrast to the aspects witnessed in free ranging elephants.

Movement of the animals kept in the circuses is restricted with no provision to range free. The animals were confined to their shelters except during working or bathing; activities were undertaken in a severely restricted space. Thus, the animals spent nearly 20—23 h within cramped environment. Mean value for 'chained status' is 0.0.

Interaction occurs among the animals in these circuses. However, interaction is a complex behaviour, and an important component of learning. Learning is integral to the survival of a social species like elephants. The animal needs freedom to interact. This needs to be viewed in the context of chaining the animal for long durations which imposes restriction on the freedom to interact.

Chaining an animal, especially for long durations in the same place, results in monotony, restricts learning behaviour and imposes severe restrictions on interaction. Hence, the presence of more than one animal in a circus does not imply that the condition of interaction required for elephants is fulfilled.

Ninety Six per cent of the animals observed exhibited stereotypic behaviour (mean rating 0.43). Stereotypy (exhibition of unnatural repetitive body movements) is the result of chronic stress and trauma.

The circus elephant's work-life routine comprises of monotonous daily routines, exposure to approximately 9 h of loud music and approximately an hour of exposure to 4000 watt halogen lamps.

Mean rating for 'nature of work' is 0.33 and work type involved repeated performance of a few behaviours such as "pooja" or worship, ringing bells and "power behaviour" such as balancing itself on a stool or on one leg. Physical characteristics such as the elephant's weight, and the force needed to balance itself as a consequence of its sheer size make these power performances a considerable source of health risk and strain to the animal.

The animals were put to work for most part of the year (8—12 months) for an average of three shows per day. The work type is also an imposition of inane, repetitive behaviours over which the animal has no control or choice.

All the animals were only stall fed. No opportunity for natural browsing or grazing existed or was even possible. Ideally, the food provided should take care of nutrition requirements as well as exercise. Exercise while eating involves stretching, stamping, pulling, bending, and moving. There is no scope for circus animals to have both nutritive and exercise-based foods.

Maintenance of records was very poor or absent. Records of the reproductive status or health were absent. This indicates total lack of professional management. Record keeping is an indication of how sensitive the company is towards the welfare of its animals. For instance, the absence of health records implies the absence of a welfare mindset and indifference to the well-being of the animal.

Mean rating considered across all parameters is 4.3 with 58% of the ratings ranging from 0 to 3. Thus, this rating value suggests the extent of the occurrence of poor welfare status for the observed animals.

Overall mean rating across all individual rating values for handlers' welfare was 4.34 with 47% values occurring in the range of 0 to 3. The overall ratings suggest poor welfare status of the mahout/cawadi.

Recommendations

It is recommended that since basic welfare needs of elephants cannot be met within circuses considering their inherent nature and limitations and their mode of functioning, banning elephants in circuses is the progressive and humane step to be initiated with immediate effect.

Till this happens, no new animal should be recruited; and strong measures should be put in place to monitor the existing elephants in circuses. Micro-chipping can be considered as one of the measures, as well as monitoring all elephants in circuses through local committees, under the auspices of the Chief Wildlife Warden of the State.

Permits to set up a circus with existing elephants should be issued only in places where adequate food and water are available and facilities to fulfil their ecological, behavioural and social needs exist. This is where the City Municipal Corporations and Forest Departments can take positive responsibility to ensure adequate facilities for the duration of the stay where a circus has applied for permit to perform.

"Captivity is an ecologically and evolutionarily unprecedented condition that constitutes a dramatic departure from the normal lives of free-roaming elephants" (Bradshaw, 2007)

Introduction

Circuses are commercial travelling establishments, comprising human and animal performers. This includes a variety of animal species, and humans of differing socio-cultural, economic and emotional diversity. Performance also includes display for entertainment. Circus economies are determined by the marketing strategies they follow and the facilities and permissions provided by the city administration. The location chosen depends greatly on the economic and commercial viability of towns/cities and the interest and saturation levels of the audience.

Performing animals in circuses have a long history, both in terms of the range of animals used and in the context of the "performances" they are compelled to execute. The animals are trained or conditioned to exhibit these behaviours without any option to do otherwise. Owners of elephants maintained in institutions like circuses offer different reasons for keeping them. The captive conditions imposed in such places are likely to involve occurrence of conditions alien to an elephant's natural lifestyle (Bradshaw, 2007). This divergence between conditions in captivity and the natural history of the animals leads to diminished welfare of the animals in captivity.

The sole purpose of the elephants' existence in circuses is their ability to generate revenue. With this in mind, the welfare status in the way the animals are cared for, especially wild animals like elephants that have never been domesticated, assumes immense importance. Captivity enforces on to the elephant an environment which deviates, in varying degrees, from those experienced by them in their wild state. For the elephant, the imposition and occurrence of unnatural conditions has consequences on its morphological, physiological, psychological, behavioural and social aspects (Bradshaw, 2007).

According to the Animal Welfare Board of India (AWBI), the regulatory body with which all circuses in India are registered, there are 15 circuses using 65 elephants for entertainment. The study of 31 elephants belonging to seven circuses therefore encompasses 48% of the current elephants held within the management regime. These circuses were chosen owing to their availability at the time of sampling. The circus companies were not local or confined to a particular region but travelled through the major part of the country. The study of circus elephants and their mahouts was necessitated due to insufficient information available on their welfare and management status.

New scientific data available on stress and related parameters (Bradshaw, 2005, 2008) make this study more significant in terms of studying the effect of deprivation, forced confinement, mental and physical torture on elephants. The reactions to the above conditions can be extrapolated from human beings to elephants because of the high cognitive intelligence of both the species (Bradshaw, 2004, 2005).

Survey methods and data processing

Circus elephants were surveyed using a standard datasheet covering factors such as space, facilities, manpower and funds. The main objective of the investigation was to evaluate the animal's living conditions, and their physiological, behavioural, psychological, emotional health profile. The investigation also considers the drastic difference in circus conditions compared to elephants in the wild.

Apart from a detailed investigation of the welfare aspects, each of these parameters was rated on a scale of 0—10. Ten represents satisfactory conditions approximating those of natural environment and 0 bad conditions for the animal within that parameter (see Appendix 1 for parameters used and their rating scale). These parameters have been used to review and compare the welfare status of the captive elephants from different management regimes. The parameters, rating values and their welfare significances are under critical review by the experts on the subject (Varma, 2008).

The suitability of a parameter depended on the replication of near natural conditions for the animal. Any feature which provided conditions experienced by the animal in the wild state was given a rating of ten. The more the deviation from this state, the lesser the rating that was accorded. Scores between 0.0 and 2.4 constituted bad living conditions and those between 2.5 and 4.9 implied poor conditions. Ratings in the range 5.0—7.4 indicate moderate living conditions while values between 7.5 and 10.0 are satisfactory.

For example, the common provision of hard surfaces such as stone or concrete floors gets a score of 0 as compared to the availability of natural substrates like an earthen floor. Low score for hard surface is meant to reflect the ill-effects of such substrates on the health of the animal, specifically the feet for an animal as large as that of the elephant. Each parameter representing different facets of captivity was measured using several sub-parameters. For instance, the shelter or enclosure provided to the animal was measured in terms of its type (whether akin to natural forest conditions or a man-made structure), size, floor type, maintenance of hygiene and availability of shade within.

The rating for each parameter (e.g., sleep) was averaged across its sub-parameters (e.g., duration of sleep) to give a mean value for that feature. Welfare status of the mahout/cawadi (handler/assistant to mahout) was rated by studying his socio-economic profile. The rating scale is the same as for the elephants. High ratings imply suitable social and economic conditions prevailing for the mahout/cawadi.

Some parameters were rated based on a "Yes-No" type of information. In such cases, rating was based 10 or 0 without any scores in between. A score of 10 implies occurrence of a parameter suitable to the animal while 0 indicates its absence. For some parameters mean value (with standard deviation and error) was calculated (e.g., mean of age class of elephant kept in each regime, or mean distance from camp to water, etc.). For some parameters, proportions of individuals or occurrence were calculated (for e.g., proportion of male and female (of all age class) kept in each regime or proportion of individual elephant exposed to water from a river or other sources). Mean with standard deviation and error (SE) and percentage coefficient variation (%CV) of rating was calculated for each category.

Results
Population status
Mean age of the animals kept in the circuses was 28.9 years (SE=0.12, N =31) ranging from 5-52 years (Figure 1.1). Of the thirty one elephants, 27 were females, ranging from 7-42 years (Mean=28.0 years). The four male elephants ranged from 5-52 years and male to female ratio was 1: 6.75.
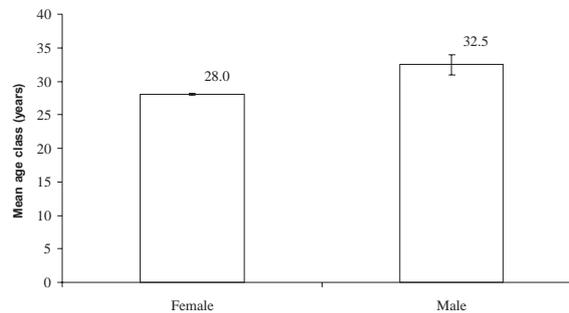
Figure 1.1: Mean age of circus elephants: Mean age class (± SE)
of elephants is plotted against different sex classes.

Source of elephants

The elephants were reportedly purchased from Sonepur Mela, temples in Kerala or transferred across owners of different circuses. Elephants that are purchased/transferred across circuses or facilities/gifted, were given a low rating value as such change in ownership may involve wide variations in captive conditions leading to occurrence of stress among the animals. Mean rating is 2.9 (SE=0.07, N=20) with 95% of the animals getting a rating less than three.

Purpose of keeping

Use of the animals for commercial purpose and their maintenance in unnatural conditions was given a low rating. Mean rating is 0.0 (S.E.=0.0, N=24).

Shelter type

All the elephants were housed in canvas tents (Figure 1.2a) and this was the place where the animals were kept when not performing. Animals which were housed within a structurally enclosed space, implying limited or no freedom of movement were given low rating . Mean rating is 2.4 (SE=0.02, N=31).

Shade type

The tents were also a source of shade for the animals (Figure 1.2b). Exposure of the animals to changing weather conditions and absence of choice for the animals in opting for a suitable place can lead to health problems. One of the significant factors is

Figure 1.2a : Source of shelter and shade

Figure 1.2b: Source of shelter and shade; note dust layer on animal's body to tolerate the extreme heat

the type of shade provided, as the animals are restricted to their enclosures for more than 20 h per day. Mean rating is 2.3 (SE=0.07, N=15) with all the circuses getting a score of less than four.

Drinking and bathing water source
Water was provided through tankers or by taps (Figure 1.3). The shelter was also the bathing, resting and sleeping place. Plastic scrub or coconut fibers were used while bathing.

Low ratings were given for sources of drinking water susceptible to contamination (due to storage) and difficulty of access for the animals. Mean rating for drinking water source was 2.0 (SE=0.04,N=24) with all the values ranging from 1 to 3. Mean rating for bathing water source is 1.8 (SE=0.09,N=12) with all values ranging from 1-3

Tests for water quality
Quality tests on the water indicate the presence/absence of pollutants/contaminants. Mean rating is 0.0 (SE=0.0, N=22).

Provision for exercise
The animals were walked for a period ranging from 1-2 h. This was usually around the circus premises.

Free-ranging or chained status
All the elephants were chained for a minimum duration of 20 h. The use of chains in more than one region of the body was common. Spike chains were used for some of the   animals (Figure 1.4). Restriction on movement imposed on the animals has associated effects on the other parameters of welfare, resulting in diminished welfare status. Mean rating is 0.0 (SE=0.0, N=22).

| Figure 1.3: Source of water; single bucket of water is shared by 3 elephants | Figure 1.4: All the elephants are chained; spike chains are used for some of the animals |

Region of chaining
Use of chains on more than one part of the body and neck of the animal was given low rating. Mean rating is 0.32 (SE=0.03,N=22) with 68.2% of the animals getting a rating of 0.0.

Social interaction
All elephants were reportedly allowed the opportunity for interaction with other elephants, but only within the circus enclosure. Although interactions are allowed, these

distances. Elephants in the wild are used to unconditioned interactions, critical to their well-being. Chaining severely restricts the ability to function as a normal family group with natural relationship hierarchy.

Behaviour
Fourteen elephants were described as quiet and/or reliable. Nine were said to be nervous and/or unpredictable. Twenty-three of the observed elephants exhibited stereotypy (continuous repetitive movements of trunk and body-signal of a stressed individual with mental problems) of varying intensity (Figure 1.5). Psychological conditions of the elephants reflect in differing behaviours like stereotypy, hyper-aggression, depression and self-injury.

Occurrence of stereotypy
Prevalence of stereotypy among captive animals is considered to be an indicator of poor welfare status. Low rating values indicate high incidence of occurrence of stereotypy. Mean rating is 0.42 (SE=0.06, N=24) with 96% of the animals exhibiting stereotypy.

Nature of work
The circuses usually perform three—four shows a day. The work type for the elephant in each show, involves performance of activities like pooja in front of an audience, playing cricket and walking in a procession within the arena. Some circuses also perform "power behaviours" such as standing on one foreleg on a stool and rolling on a wooden barrel. Timings of the circus are from 1:00—9:30 p.m. Work involving performance of behaviour alien to the natural behavioural repertoire of the animal is given low rating value. Mean rating is 0.32 (SE=0.05, N=31) with 97% of the animals getting a rating of 0.0.

Food provisioning
All the elephants were only stall fed within the circus area. Paddy straw, rice, wheat bread, 'jaggery' (raw concentrate of sugarcane juice), 'ghee' (clarified butter), 'banyan' tree leaves or green grass (Figure 1.6) and coconut are some of the food items provided. Animals provided with only stall feed are given low rating as this practice does not provide the variety of food that an animal needs and gets while browsing /grazing. Mean rating value is 0.0 (SE=0.0, N=31). Ability to forage is essential for elephants psychologically and physically. Lack of choice impairs them psycho-logically, affecting their mental health.

Figure 1.5: Occurrence of stereotypic behaviour is due to long hours of standing with no physical activities

Figure 1.6: Feeding provided has no scope for exercise and balanced nutrition.

Reproductive status

In the group of circus elephants examined and for which data is available, females are not exhibiting oestrus cycles. This may be related to chronic stress. For others, the status is said to be unknown. Male reproductive status is also unknown. Records are not maintained for 'musth' status. However, 'musth' is said to occur in one male elephant for which data is available. Allowing the animal to breed, or the occurrence of mating, is an indicator of the animal's reproductive and welfare status. Mean rating is 1.3 (SE=0.1, N=16) with 86% of the animals getting a rating of 0.0.

Disease/injury

Foot-related problems such as toe nail cracks and foot rot (Figure 1.7) are common. Records were not maintained or absent regarding health status of the animals. Deworming/vaccination status was poor and no veterinarians were permanently associated with the circuses to tend to the animals' health. Mean rating for occurrence of disease/injury is 0.0 (SE=0.0, N=21) implying prevalence of disease/injury.

Figure 1.7: Toe nail cracks/foot rot are common problems in circus elephants.

Overall rating pattern

Of 33 parameters considered for the elephants surveyed in circuses, the ratings ranged from 0 to 9.7. Only 5 (out of 6) parameters such as the opportunity to walk, interaction with other elephants, hours of interaction, interaction distance and floor type get ratings above 7.5 (Figure 1.8). About 21 parameters (63%) have values less than 3 and the parameters such as free ranging status, food type, purpose of keeping, and work type get zero value.
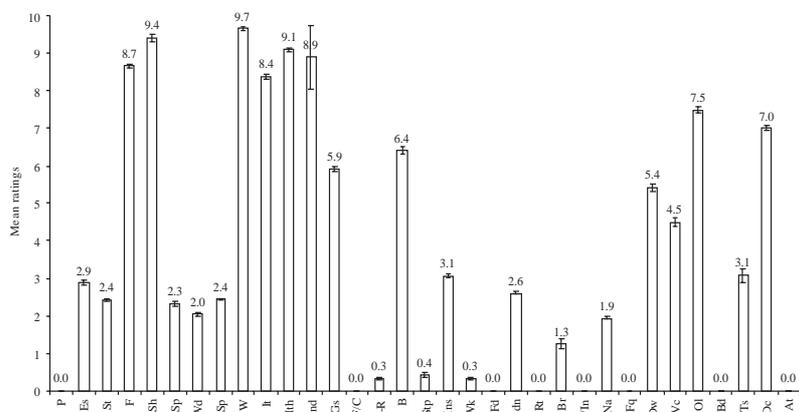
P   : Purpose of keeping   Es   : Elephant source   St   : Shelter type
F   : Floor type   Sh   : Shade   Sty : Shade type
Wd   : Drinking water source   Sl   : Sleeping place   W   : Walk
It   : Interaction   Ith : Interaction hours   Ind : Interaction distance
Gs   : Group size   F/c : Free ranging status   C-R : Chaining region
B   : Observed behaviour   Stp : Stereotypic behaviour   Ins : Intensity of stereotypy
Wk   : Work type   Fd   : Food provisioning type Fdn : Number of food items
Rt   : Ration chart usage   Br   : Breeding opportunity   D/In : Occurrence of disease/injury
Na   : Nature of disease   Fq   : Frequency of occurrence Dw   : Deworming status
Vc   : Vaccination status   Ol   : Oiling done   Bd   : Body measurement taken
Ts   : Blood/urine/dung tests done Dc   : Doctor Availability   At   : Vet. Assistant

Figure 1.8: Ratings for welfare parameters: Mean rating (0 to 10) is plotted against
different welfare parameters sampled.

Ratings of less than 5.0 were considered to reflect "poor" welfare status. The overall
mean rating suggests this. A significant point of importance is the occurrence of
the maximum score of 10. In these rating values, 32% of the parameters are given a
rating of ten. However, these values formed part of a set of parameters whose rating
occurred in only two categories: 0 or 10 (the Yes-No type of answers referred to earlier
in the document). Such parameters do not provide additional detailed information of
the existing conditions. They need specific information of prevailing conditions which
would have been rated had information been available. Such parameters formed
27% of the overall ratings sampled for evaluation. Within such parameters, 37% of
the ratings were 10 scores. Despite the occurrence of 10 scores, the overall mean
rating of the elephants was less than 5.0. This rating, thus, suggests the extent of
poor welfare status for the animals observed (Figure 1.9).

Mahout/cawadi welfare and experience status

Mean age of the mahout/cawadi employed in circuses was 29.8 years, ranging from
18-60 years. Mean experience in this job was 14.1 years, ranging from 0.3-30 years
(Figure 1.10). Mean experience with his elephant (as per cent of the elephant's age)
was 21.8, ranging from 1.3 to 87%. Mahouts are often changed for the elephant, and
people with less experience as handlers are employed. Mahout experience with each
elephant was also low. Seventy two per cent of the handlers have received training on
the job. Mean annual salary was Rs. 37,500/- (1 US$=43.75) ranging from Rs. 24,000
to 60,000/-

15

Figure 1.9:Long hours of standing in very unhygienic locations.

Figure 1.10: Routine handling by the keepers.

Overall mean rating (considered across all individual ratings) is 4. (SE=0.002, N=1057) with 60% of the values getting a rating of 0-4 (Figure 1.11).
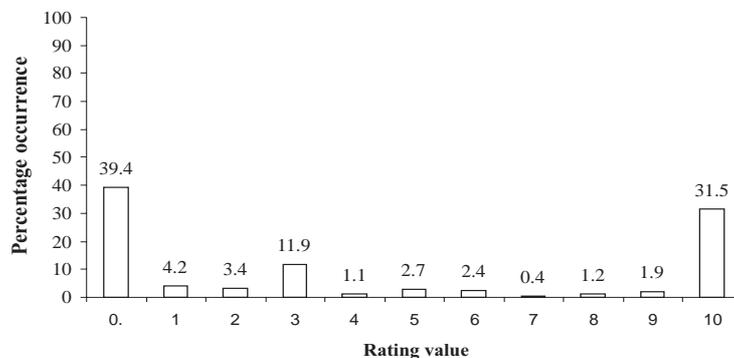
Figure 1.11: Ratings for circus elephants plotted against individual ratings.

All the handlers used a tool to control their elephants. The tool was a wooden staff, sometimes topped with a metal spike. These tools cause pain and are also used as reinforcement of pain conditioning in breaking procedures. Periodic health check-ups were not common, with 79% not having had any health checks. Sixty per cent of the handlers reportedly did not consume alcohol. Insurance cover was not provided for most handlers for whom data was available. Welfare status of the handlers was assessed using several socio-economic parameters. The experience of the mahout/cawadi in the profession was also rated. Overall mean rating, across all individual rating was 4.34 (SE=0.02, N=114) with 47% values occurring in the range of 0-3. The overall rating suggests poor welfare status of the mahout/cawadi and poor welfare of elephant handlers may be associated with poor handling of the animals.

Discussion
Overall mean rating was 4.3 with 58% of the values getting a rating ranging 0---3. Scores between 0.0 and 2.4 constitute bad living conditions and those between 2.5 and 5.0 poor conditions. This overall mean rating implies poor welfare condition of the elephants. A significant feature common across all the circuses observed was the duration for which the animal was kept in its enclosure. Mean rating for this parameter is 2.5 (SE=0.0, N=25) Wild elephants spend nearly 80% of their time walking and

grazing (Sivaganesan and Johnsingh, 1995; Kane, et al., 2005); in other words, they are active. Keeping an animal enclosed for 87% of the time coupled with a maximum duration of work of two hours implies that the animal has little to occupy for itself. Kane et al. (2005) suggest "occupational variables" in the context of their normal activity pattern in the wild. Accumulation of pain memories and trauma of capture, transfer, breaking process, and training along with current status of confinement can lead to devastating physical and psychological trauma and chronic stress (Bradshaw, 2007). The confinement of the animals has led to low ratings for the shelter type, shelter size and sleeping place.

Even though mud flooring was provided, accumulated excreta in that spot led to unhygienic and slippery conditions. These have negative effect on their psyche as elephants in the wild are known to be very fastidious (Bradshaw, 2007). Access to water is restricted as it is available only from a tap, implying that the animal cannot drink water or bathe itself whenever it needs to. Coupled with this is the elephant's need to regulate its temperature and maintain good skin condition by bathing. There are reports that bathing improves skin health and helps in cooling during prevalence of high temperatures (Shoshani and Eisenberg, 1982) [†]. There was no access to running water, with potential for contamination of the water being present. Also, none of the elephants has opportunity to bathe in a water body large enough to immerse the animal or wallow in mud to provide much-needed relief from heat or ecto-parasites. The animals are taken for walks around the circus premises. According to Fowler, 2001[†], variation in substrates is needed to help maintain foot health.

All the animals are allowed to interact. However, this needs to be weighed against the fact that all the observed animals are chained and are not allowed any time to range free. Chaining prevents (among other related and important factors) natural socializing among the animals (Brockett et al., 1999) [††]. Also, aggressive interactions among them may be stressful considering restrictions imposed on their movement. Interaction is a complex behaviour and is an important component of learning. Learning is integral to the survival of a social species like elephants. The animal needs the freedom to interact, all the more in the context of chaining the animal for long durations which imposes restrictions on its freedom to interact. Social interaction is a significant factor in maintaining the health and psychological well-being of an elephant, especially for females. It is also important for males in "musth" to have 'interaction' with females; however, the female elephants must have a means to escape from aggressive males in musth and be the ones making the choice to move close to an elephant in musth. Most of the animals are chained on more than one leg. Gruber et al. (2000) report lower incidence of stereotypy among circus elephants when not chained. Access to socialize is limited as the animals are not allowed free movement. All the observed animals exhibited stereotypy in varying degrees. Poor welfare conditions are likely to cause higher incidences of stereotypy (Clubb and Mason, 2002). These conditions imply that the animals have "nothing to do" for most part of the day and this needs to be considered along with the occurrence of stereotypy. The use of "spike" chains also needs to be noted. Spike chains might lead to foot-related injuries due to the abrasive action of the chain against the animal's skin.

The nature of work was unnatural to the normal lifestyle of the animal. Work involved repeated performance of the same actions for an average of three shows a day. This could lead to abnormal muscle development and potentially hazardous strain on incorrect muscle groups and the skeletal structure. Performance for entertainment is alien to an elephant's natural repertoire of behaviours. The animals are made to stand on a foreleg on a stool. Such behaviours are called "power behaviours" due to the effort put in by the elephant to perform it (Clubb and Mason, 2002). Physical characteristics such as an elephant's weight and the force needed to balance itself as a consequence of its sheer size makes the performance of such actions a considerable health risk to the animal. Studies show physical damage to the animal as a consequence of being forced to perform power behaviours (Lindau, 1970; Kuntze, 1989).

Food delivery is in the form of stall feeding, without any opportunity for free-range browsing. Free-range feeding behaviour adds to the diet and additionally, provides a platform for the expression of natural behaviour among the group members. It also leads to natural and healthy exercise in the search and preparation of food material such as stripping leaves, peeling bark off trees, dusting grass and a host of food-related activities. The lack of occurrence of oestrus cycles among adult females indicates serious health and welfare problems. Mahouts are often rotated among different elephants. Frequent changes of handlers imply a period of stress for the animal as it has to learn to adjust to the ways of the new mahout. The change in mahouts is said to be due to the incentive of increased salary from other circuses.

Overall, the study reveals that people with less experience as handlers were employed; and experience with each animal in the circus was also low (maximum years of experience with an animal was five, for managing a 52-year old male elephant). Most of the handlers are not trained and no health check-ups are conducted for them. Diseases such as tuberculosis can be transmitted from humans to elephants and as such health check-ups are an important aspect of captive elephant management (Cheeran, 1997).

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Section 2 :

Captive Elephants in 'Great Prabhat Circus' - Management and Welfare

Executive Summary

Data was collected from 'Great Prabhat Circus', located in Sanatnagar, Hyderabad, Andhra Pradesh on different aspects of the captive environment of five elephants. Physical aspects of their living environment, physiological parameters, behavioural features and health profile of the elephants were assessed using selected welfare parameters. The same were scored based on ratings.

Higher ratings for a parameter depended on how close the parameter reflected near natural conditions for the animal: i.e., any feature which provides conditions experienced by the animal in its wild state has been given a rating of 10. The greater the deviation from this state the lesser the ratings, with 0 representing the situation farthest from the natural state.

The welfare status of the mahout/cawadi was rated by studying his socio-economic profile and the rating scale is the same as for the elephants. The mean age of elephants kept in the circus was 43.8 years with females ranging from 35---52 years.

All the elephants were housed in canvas tents, with shade size of 126 m^2. Water was provided through tankers and the shelter also serves as bathing/resting and sleeping place. The mean rating for shelter type is 2.5, shade availability 1.0 and overall mean for water and associated parameters 2.6. All five elephants were allowed to interact and the interaction was within the circus area. The mean rating for this parameter is 8.0 and it ranged from 6.9 to 9.0.

The elephants were chained all the time except during show time. The mean chaining duration was 20.8 hours, and mean rating for chaining was 0.4. Work type included performance of 'pooja' in front of an audience. The elephants would also perform "power behaviours". The mean ratings for work and associated parameters is 2.0. This circus travels a minimum of 100 and a maximum of 500 km. Sometimes the elephants are employed for begging in high traffic density regions.

The elephants had only stall feeding within the circus area. Overall mean rating for this parameter is 1.4. Low values signify total absence of free ranging; variety of food is limited and no record of rations is maintained. Occurrence of oestrus cycles among females and musth for males is unknown. There are no records of musth status.

Elephants have foot-related problems: toe nail cracks and foot rot. Parasites were seen on the ears and belly of one elephant and none of the animals had been dewormed/vaccinated. The mean rating for health status and veterinary care or availability of doctor is 0.0. The overall rating is 2.8, with 88% being less than 3.

The ratio of elephants to handlers (mahout/cawadi) was 1:0.8; with a mean experience in this job of 5.1 years and with his elephant in the circus of only 1.8 years. Of all the handlers, only one had joined the profession as it was his traditional employment, the others joining any employment. All the handlers used tools to control elephants. Sixty per cent of the handlers consumed alcohol and the frequency ranged from "after work" to "frequently".

Corresponding to the low ratings for the elephants, the ratings for the welfare status of the mahout/cawadi was also poor (mean rating being 3.2).

Introduction
The objective of the investigation was to assess the welfare of elephants maintained by the 'Great Prabhat Circus' at Sanatnagar, Hyderabad, through evaluation of specific parameters of the elephant and its mahout/cawadi. Welfare of the captive elephant was evaluated by collecting data on the physical aspects of its living environment, physiological and behavioural features of the animal and its health profile. Data for 32 parameters, representing the welfare status of each of the five elephants, was collected by observation and interview. The welfare of the mahout/cawadi was evaluated across 12 parameters (see Section 1 for survey methods and data processing).

Elephant number and their age class
The mean age of elephants in the circus was 43.8 years (SE=0.66, N =5) with age of females ranging from 35---42 years; one single male elephant was 52 years old.

Source of elephants and purpose of keeping
All the elephants belonged to a circus owned by the father of the present owner. And have been transferred to him. The elephants were brought to the present location for performing in the circus.

Shelter
1. All the elephants were housed under canvas tents.
2. Shade size available within was 126 m^2.
3. The animals are rested at this place when not performing.
4. The shelter is cleaned frequently using spade/broom.

The housing provided to the animal in captivity has been assessed across several features such as the occurrence of natural or semi-natural forest conditions, materials used in building the shelter (asbestos/concrete), whether the animal is allowed to range free under natural/semi-natural conditions, etc. All the elephants (N=5) were housed in temporary canvas tents within which the animals were kept for the duration of the day, except when used for work. The mean rating value for shelter type was 2.5 (SE=0.0, N=5). The tent itself was the source of shade for the animals. The mean rating for shade availability was 1.0 (SE=0.0, N=5).

Water
Water was provided through tankers and the shelter was also the place for bathing, resting and sleeping. Bathing area was 126 m^2. Elephants were bathed for a mean duration of 0.5 h (SE=0.0, N=5) and a plastic scrub was used while bathing. Availability and access to water are important for maintaining the health and welfare of captive elephants. This was rated across six sub-parameters. The overall mean rating for water is 2.58 (SE=0.20, N=6) with all the observed elephants getting a rating of less than 4 (Figure 2.1). All the observed animals had access to a perennial souce of water provided from a water tanker (Figure 2.2). This source is considered stagnant. Rating for source of water is 1.0 (SE=0.0, N=5). There was no provision for quality analysis of the water being provided to the animals. Rating for potability is 0.0 (SE=0.0, N =5). Use of hard substances as a scrub while bathing the animals can lead to abrasion of the skin and consequent infections. Rating for bathing materials used is 0.0 (SE=0.0 N=5).
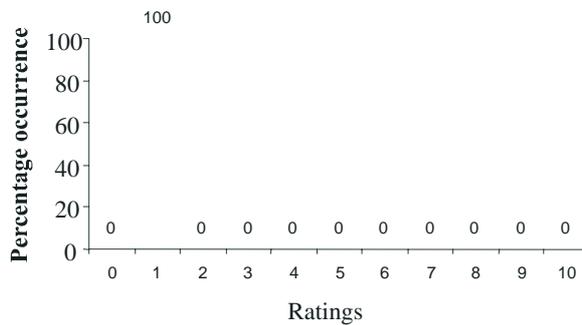
Fig. 2.1 Ratings for elephants for water parameters.

PWS	: Perennial water source	DWS	: Drinking water source
WAS	: Water analysis status	BP	: Bathing place
BD	: Bath duration	BM	: Bathing materials
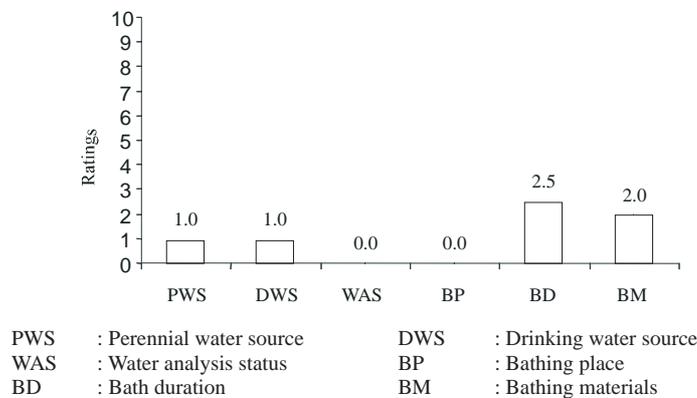
Figure 2.2 : Ratings for water sub-parameters.

Opportunity for exercise

The animals were walked for 1 km for a duration of 1---2 h. Captive animals are usually restricted in terms of space provided to them for movement. This results in lack of exercise. The opportunity provided for walking the animals was rated. Rating for 'walking' is 10.0 (SE=0.0, N =3).

Sleeping place and duration

Place and duration of sleep have been rated, because unsuitability or insufficiency of any one factor will lead to corresponding health and welfare problems for the animal. Rating for 'sleeping place' is 2.4 (SE=0.0, N=5) as the shelter and sleeping place are the same. Rating for 'sleep duration' is 10.0 (SE=0.0, N=4).

Social interaction

All the five elephants were allowed to interact.

Duration was round the clock.

Interaction was within the circus area.

Opportunity for interaction is a factor of immense importance for social animals such as elephants, especially when four of the five animals in this circus are female.

Interaction was rated across four sub-parameters. Overall mean rating is 8.0 (SE= 0.51, N=4) with ratings for individual elephants ranging from 6.9---9.0 (Figure 2.3).
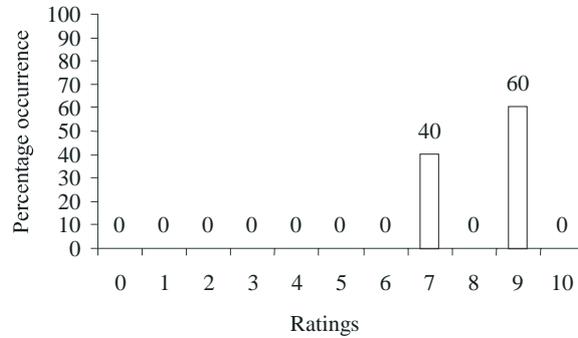
Figure 2.3: Ratings for interaction.

All the observed animals are allowed to interact with other animals in the group. Rating is 10.0 (SE=0.0, N=5). Rating for duration of interaction is 10.0 (SE=0.0, N =5). Distance between animals is rated to include for interactions involving touching. Rating value is 6.0 (SE=0.58, N= 5) with three animals getting a score of 10.0 (Figure 2.4).

OI: Opportunity for interaction   GS: Group size
IH: Interaction hours   ID: Interaction distance
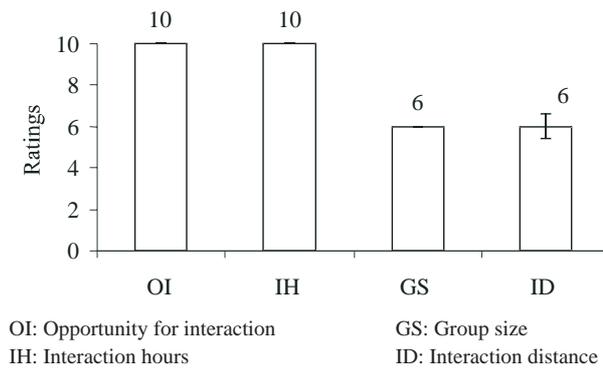
Figure 2.4: Ratings for interaction sub-parameters.

Behaviour

Four elephants are quiet and one reliable. The male elephant is also reliable. While Laxmi, a forty-year-old female exhibits stereotypic behaviour by continuous movement of its head, Prabha, also forty-year-old female, did not exhibit any stereotypy.

Observed behaviour of the animals is rated based on the ease with which the elephant interacted with people and other animals. Rating value is 10.0 (SE=0.0, N=5) with all animals being described as quiet/reliable. The expression of stereotypic behaviour by the animals was also rated. Of the two animals observed for this parameter, only one was reported to exhibit stereotypy.

Chaining

1. The elephants are chained all the time except for show timings and bathing. Mean chaining duration is 20.8 h (SE=0.33, N=5).
2. Bahadur (52 years, male), Prabha (35 years, female) and Rupa (50 years, female) were tied with spiked chains.
3. Mean chain weight (for legs) is 15.6 kg (SE=0.65, N=5).
4. Chain size is 50 cm^2.
5. Chain length is 4.6 m (SE=0.24, N=5).

Restriction of movement by chaining is characteristic of most captive elephants. This is rated across two sub-parameters. Mean rating for allowing the animal to range free is 0.0, (SE=0.0 N =5) with none of the animals being allowed to free-range. All the animals are restricted to their shelter for more than 20 h/day. Rating for region of chaining is 0.4 (SE=0.18, N =5) with three animals getting a score of zero.

Work

Work type, according to the circus owner, is to perform 'pooja' in front of an audience. However, they also reportedly perform "power behaviours" such as standing on one foreleg on a stool, and rolling a wire barrel. Duration of work was 1 hour and timings of the circus were during 1.00---9:30 p.m. Entertainment is the main reason for maintaining elephants in a circus. The nature of work which the elephants performed is rated. Work type which is alien to their natural behaviour is given low rating value. Mean rating is 2.0 (SE=0.53, N=5) with one elephant Geeta (42 years, female) not given any work. There is no supply of water during work but were given fodder and coconuts. Rest was of 2.5 h duration between each session of work.

Provision of food

All the elephants were provided only stall feeding within the circus area. Paddy straw, rice, wheat bread, flat rice with jaggery and 'ghee', 'banyan' leaves and coconut were provided (Table 1). Paddy straw was given for an average of 9 times/day.

Table 1: Type of food and quantity provided for the elephants in circus

Food items	1	2	3	4	5	6
Name	Paddy Straw	Rice	Wheat bread	Rice with jaggery	Banyan leaves	Coconut
Quantity	3--5 bundles	5 kg	5 kg	7 kg	2--3 bundles	3 kg

The kind of food provided to captive elephants is usually under the control of the animals' human handlers. Low rating value is given if the animal is not allowed to range free for food, provided with fewer types and an account of the diet is not maintained (Figure 2.5). Overall mean rating was 1.4 (SE=0.76, N=3).
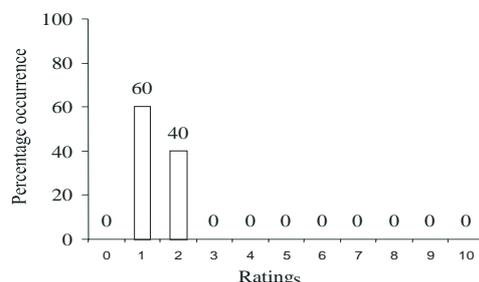
Figure 2.5 : Ratings for food.

Low ratings were given if the animal was not allowed to range free to browse/graze (Figure 2.6). Rating is 0.0, (SE =0.0 N=5). The number of food items provided is rated in the context of whether the animal is given only stall feeding or not. Mean rating is 4.1 (SE=0.12, N=5) implying that animals are given at least seven different types of food but allowed only stall feeding.
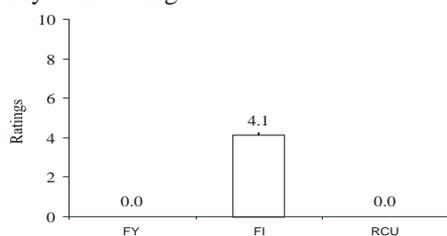
FY: Food provision type   FI: Food type (no.)
RCU: Ration chart usage

Figure 2.6: Rating for food sub-parameters.

Reproductive status

Occurrence of oestrus cycles among females was said to be "unknown". Male reproductive status was also "unknown". Providing an opportunity for a reproductively active female animal to express its natural way of life minimizes the alien nature of a captive environment. Occurrence of oestrus cycles was reported to be "unknown" for the adult female elephants. Ratings for exposure to males is 0.0 (SE=0.0, N=4).

Reproductive status of the single male, Bahadur (52 years.) was not known. No report of it having sired any offspring is available; neither of its 'musth' status.

Health status

Disease/Injury occurrence

1. Three of the five elephants have foot-related problems: toe nail cracks, foot rot.
2. Parasites were seen on the ears and belly of the male elephant.
3. None of the animals is dewormed/vaccinated.

The health of the animal is one way of assessing its welfare. This is rated across five sub-parameters. Overall mean rating is 0.0 (SE =0.0, N=5). Three of the animals have foot-related problems. Rating is 0.0 (SE=0.0, N=3). None of the observed animals has been vaccinated (N=5). The application of oil on the animal, is not done (Figure 2.7) for any of the animals (N=5).

DI: Disease/injury   DV: Deworming status   VS: Vaccination status
O: Oiling done   BDUT: Blood/dung/urine tests
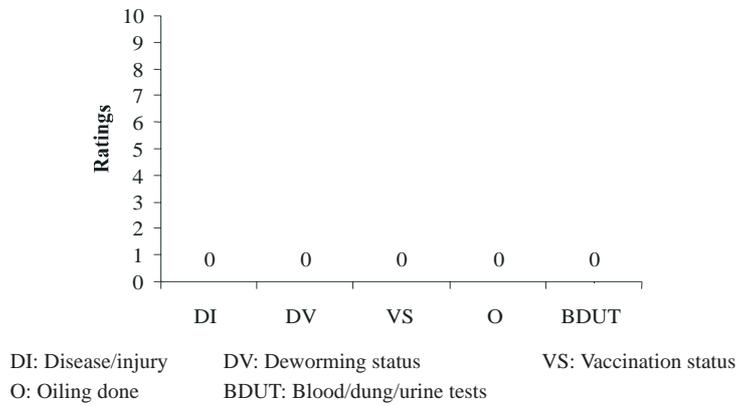
Figure 2.7: Rating for health sub-parameters

Veterinary care

Availability of a veterinary doctor, veterinary care facilities and maintenance of records was ascertained. Overall rating is 0.0 (SE=0.0, N=5) with absence of any facility (Figure 2.8) and lack of any record (service/clinical/other records).

VA: Veterinary doctor availability   VF: Veterinary care facility   RM: Record maintenance
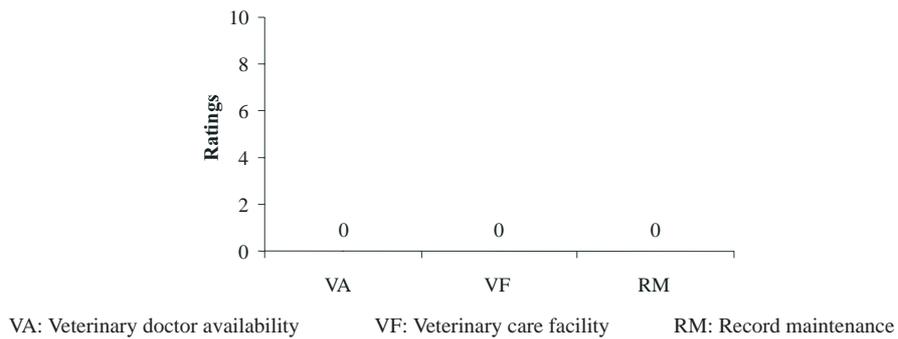
Figure 2.8: Ratings for veterinary care sub-parameters.

The overall ratings for elephants in this circus is 2.75 (SE=0.17, N=140) implying poor welfare condition for the animals with 88% of the rating values being less than 3 (Figure 2.9)
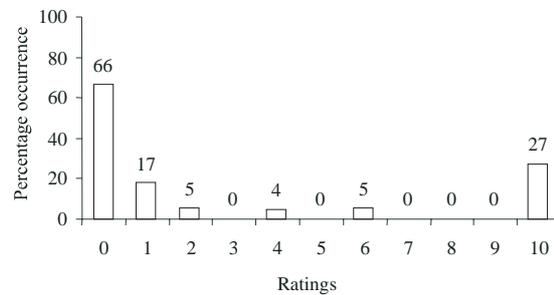
Figure. 2.9: Ratings for elephants.

Mahout/cawadi socio economic and welfare status

Mean age of the mahout/cawadi associated with the elephants in the circus is 24.5 years. (SE=0.71, N =4). The ratio of elephant to handler was 1:0.8. Mean experience in this job was 5.1 years (SE=0.69, N=4).

Mean experience with his elephant in the circus was 1.8 years (SE=0.48, N=4). Traditional occupations of the handlers were as goldsmith, butcher and weaver. Mean annual salary was Rs. 30,000/- (SE=27.7, N =4). (1US$ = Rs. 43.75)

Only one of the handlers joined this profession as his traditional. The others had joined for the sake of employment. Each mahout/cawadi spent a mean of 6 h with his elephant (SE=0.35 N=5). All the handlers used a tool to control their elephants. The number of elephants the handlers had worked with ranged from 2 to18. Three of the five handlers consumed alcohol. Frequency ranged from "after work" to "frequently". Welfare of the elephant handler was evaluated in terms of his socio-economic profile (Figure 2.10). Experience in handling elephants was also rated. Overall mean rating for mahout/cawadi is 3.24 (SE=0.04, N=44).
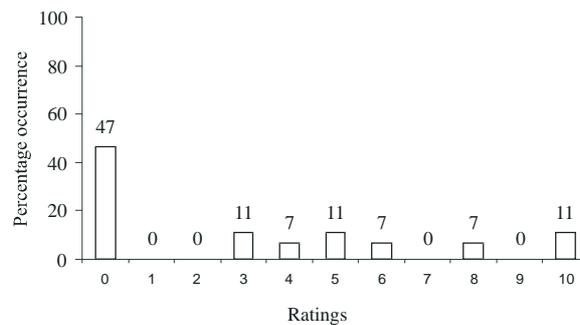
Figure 2.10: Ratings for mahout/cawadi.

Experience in the job accounting for more than 50% of the handler's age was given high rating value. Mean rating was 3.8 (S.E= 0.59, N=4) with only one mahout getting a score of 8.0. Longer duration with one elephant means less stress for the animal and the handler unlike in the case of frequent changes. Mean rating is 1.63 (SE=0.27, N=5).

Rating is designed based on the capacity of the income given, to support a family of four. Rating is 5.0 (SE=0.36, N=4) implying moderate salary to the handlers. Consumption of alcohol by the handler is given a low rating (Figure 2.11). Mean value is 2.5 (SE=0.75, N=4) with three of the four handlers interviewed being alcoholics.

Ex-A: Experience as % of handler age
Ch: Reason for choosing this profession
Tr: Training received
Ed: Education status
Ln: Languages known
AL: Alcohol consumption

Ex-E: Experience as % of elephant age
Rel: Having mahout/cawadi as relatives
Fm-Oc: Family occupation
Sl: Salary paid
Hlt: Health check-up done
Fq-Al: Frequency of consumption
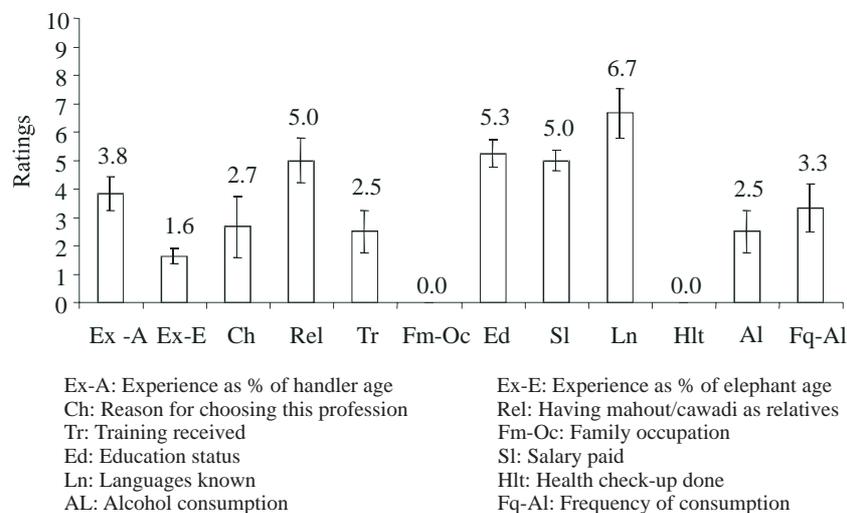
Figure 2.11: Ratings for mahout/cawadi sub- parameters.

Corresponding with low rating of the animals, ratings for the welfare status of the handlers is also very poor (Figure 2.12).
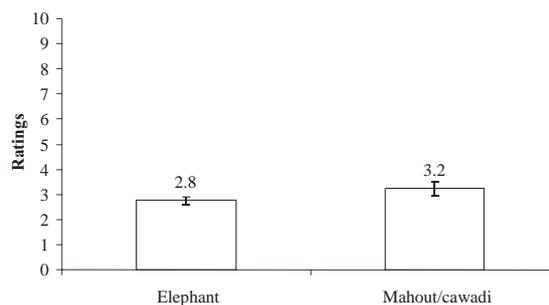
Figure 2.12: Comparison of overall mean rating.

Discussion

The overall rating for elephants in this circus was 2.75 indicating poor conditions of welfare for the animals with 88% of the ratings being less than 3. This ratings assume even more significance considering the fact that these elephants have been with the same circus for the past 15--16 years. The ratings have been designed to provide an insight into the divergence of a captive environment from conditions found in the wild state.

Low ratings for this circus could be attributed to:

l   Confinement of all the animals within a tent-based enclosure for more than 20 h a day. Reports suggest that wild elephants are active for around 20 h a day, foraging and socializing (Kane et al., 2005).

Such confinement has three aspects:

a. Physical nature of the shelter—all the animals were housed in tents with no access to natural vegetation or occurrence of different surfaces.

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b. Except for the duration of work, the animals were said to be chained within the tents. None of the animals was allowed to range free for browsing/grazing.

c. There is limited access to socialize as the animals are not allowed free movement.

These conditions suggest that the animals have "nothing to do" for most part of the day and this should be weighed alongside with stereotypic behaviour.

ι   Provision of water through tankers for drinking and bathing. This shows use of stagnant water sources which could lead to contamination. There was no provision for the elephants to immerse themselves in water or wallow and dust-bathe, an activity considered important for maintaining skin health (Kurt and Hartl, 1995). Added to this, the practice of oiling the animals was also absent.

ι   The weight and force of an animal used to balance its large size on a small stool poses a health hazard, and elephants need extra energy and skill to perform it (Clubb and Mason, 2002).

ι   Healthcare facilities were conspicuous by their absence. None of the animals had access to a veterinary doctor.

ι   There was no maintenance of records: health, service or inventory of animal-related materials.

Corresponding with low rating value of the animals, rating value for the welfare status of the handlers is also very poor.

The following aspects need to be considered:

ι   The handlers of elephants in this circus had very little prior experience.
ι   This is exacerbated by a low level of experience of handlers with specific individual elephants (maximum experience with an animal was five years, for managing a 52 year male elephant).
ι   Most of the handlers were not trained.
ι   No provision for health check-up for the handlers. The transmission of diseases across species makes health check-ups an important aspect for the handler, since diseases such as tuberculosis can be transmitted (Cheeran, 1997).

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†: Original not seen

Section 3 :

Captive Elephants in 'Russian Jumbo Circus' - Management and Welfare

Executive summary

Captive elephants are subjected to a number of factors, unnatural, unfamiliar conditions over which they have no control, that are not experienced by the wild elephants. The Russian Jumbo Circus (curiously named after a popular synonym for elephants) maintains seven elephants which it uses in its shows. These elephants were assessed for their welfare status in terms of their physical environment, opportunities for expression of their natural behavioural repertoire, physiological and health status. Management practices adopted regarding feeding, bathing, work type and other daily routines were also investigated.

Apart from a detailed qualitative investigation of these aspects, each of these parameters was rated on a scale of 0---10, with 10 representing the best living conditions for the animal as experienced by it in its wild state and 0 the worst living condition relevant to that parameter. There are seven elephants in the circus; one male and six females. Four of the seven elephants had been purchased from other sources including other circuses. However, there were no records available for inspection. Registration details were also not available.

Ratings for 'origin of the elephant' were low (mean rating of 4) and only one calf was reported to have been born in the circus. However, there were no documents to support the claim. Mean rating value for 'purpose in keeping the elephant' was 0, indicating commercial use under unnatural conditions. The elephants were tied by chains under a tent or "awning", with mud floor. As the elephants were tied in the same place for more than 20 h a day, the shelter type led to unhygienic surroundings. Their urine is collected on the ground, making it muddy and slippery.

Mean rating for 'shelter type' was 2.5, indicating structurally enclosed unnatural space for the animals. Water was procured in tankers; 4---5 buckets made available to the animals each time, and its availability was poor. Mean rating for water-related parameters was 1, implying absence of uncontaminated running water. Opportunity for exercise (walking) was reported but being situated in the middle of a metro city, problems such as sufficient space, suitable terrain and traffic density were factors to contend with.

The animals were allowed interaction among themselves, though details regarding the kind of interaction were not available. Only one female was said to be in oestrus and had given birth in 2001 (no records were available to support this claim). With this as an exception, no elephant was allowed to mate. A female (15 years) wore a spiked chain, indicating use of this device to control her restlessness and possible aggression.

Work involved monotony in daily routines, exposure to approximately nine hours of loud music, and an hour of exposure to 4000 watt halogen lamps which are a part of their work-life routine. Mean rating for 'work type' was 0. All females showed stereotypic behavior in the form of swaying and swinging their trunks and body in repetitive movements; and this may be due to the daily routines and the fact that these elephants are tied in one place for many hours at a time.

The elephants were used for three shows per day and three acts within each show e.g. "pooja", playing cricket and a procession of all the elephants with the performance of a woman seated on the trunk. There were no records of the health status of the animals, even though samples of the animals' blood were said to have been tested.

A local veterinary doctor was said to be treating the animals when the need arose. Based on observations, nail crack of the right front leg of one female elephant and blindness in the right eye of another elephant were recorded.

None of the animals had been micro-chipped.

The elephants were looked after by eight mahouts, their ages ranging from 18 to 30 years and their salary ranging from Rs. 3000 to 5,500/month. This did not include food, housing, uniform and healthcare. No regular health check-ups were conducted for the mahouts.

All the mahouts who had children showed no interest in their children joining the profession. This is significant since it implies that "mahoutry" is no longer a traditional occupation and that skills and knowledge are not passed down through the generations.

Forty-three per cent of the ratings for the elephants were in the category of 'bad' condition, the number of scores ranging from 7 to 10 constituted only 33% of all the scores.

Percentage occurrence of ratings provides interesting insights. Ratings of 0 and 10 each constituted 29% of all scores. Bad to poor rating values ranging from 1-4.9 constituted 28% while moderate to satisfactory values ranging from 5---9 contributed just 14% of all scores.

Introduction

The Russian Jumbo Circus maintains seven elephants which it uses in its routine shows. This circus toured the state of Karnataka from September 2007 onwards, visiting Bangalore during January 2008.

Elephants maintained by the circus were observed and their keepers/manager were interviewed to record morphometric observations of the animal, its physical environment, behavioural data such as occurrence of stereotypy, health status, and management practices adopted regarding feeding, bathing, work type and other daily routines.

Ratings for 23 parameters (inclusive of sub-parameters) for the elephants were identified and analyzed (see Section 1 survey methods and data analysis for more details). No ratings were given for mahout/cawadi as not enough information is available.

Status of the elephants

The circus had one male (Lucky Prasad— 45 years) and six females (age: 7---30 years). Lucky Prasad, male, 45 years, managed by mahout Munna

- ⌐ Anarkali, female, 30 years, managed by Ramesh
- ⌐ Ashoki, female, 23 years, managed by Anwar
- ⌐ Lakshmi, female, 9 years, managed by Ramesh
- ⌐ Ganga, female, 7 years, manged by Ali
- ⌐ Rani, female, 25 years, managed by Binda Paswan
- ⌐ Lucky, female, 15 years

The circus had been performing in Karnataka for eight months, beginning in September 2007 in Mysore, staying in Bangalore in February 2008 and shifting to Mangalore thereafter.

Source of the elephants

Four of the seven elephants had been purchased from different sources including other circuses. However, no records are available. Registration details are also not available. The change in conditions which an animal undergoes as a consequence of being sold/transferred to different owners implies a change in the way the animal is taken care of. High ratings have been given to captive-born animals followed by those that do not experience any drastic shifts in their living conditions.

Change in captive conditions, due to change in ownership, may lead to stress for the animal due to unsuitable, unfamiliar living conditions. Studies have shown that shifting of animals leads to breakage of social bonds, especially among females (Kurt and Hartl, 1995; Garai, 1992, Kurt and Garai, 2001)†, and a new and unfamiliar hierarchy among the animals (Kurt and Hartl, 1995; Garai, 1992).† Mean rating was 4.0 (SE=0.46, N=5) with 80% of the elephants purchased (Figure 3.1). A single female elephant born to Anarkali (female, 30 years) was with the circus.
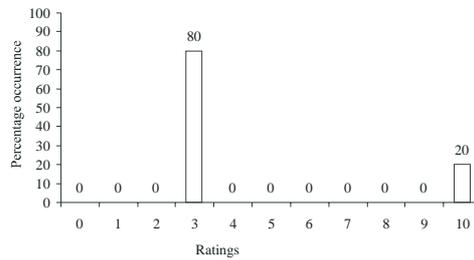
Figure 3.1: Mean rating for elephant source in circus.

Purpose of keepg

The purpose of keeping is solely for commercial reasons; when an animal is maintained for commercial use in unnatural conditions its welfare is reduced due to imposition of alien living conditions and the possibility of over-exploitation. Mean rating is 0 (SE=0, N=7) indicating commercial use under unnatural conditions.

Shelter

All the elephants were tied by chains under a 'shamiana' or tent, which had a mud floor. The type of shelter provided was rated based on the deviation from the natural conditions for the animal, with higher values indicating availability of suitable shelter for the animals. Mean rating value was 2.5 (SE=0, N=7) showing occurrence of a structurally enclosed space for the animals. The rating for floor type was 5.0 (SE=0, N=7). All the animals were tied for more than 20 h, leading to collection of urine on the mud floor and prevalence of unhygienic and potentially dangerous conditions as a slippery floor might result in serious injury to the animal.

Water

Water was brought in tankers and 4---5 buckets are given to every animal each time. The elephants drink water thrice a day. All the animals were bathed every day. An important factor in the assessmet of welfare of captive elephants is the availability of and access to water. This parameter was rated across four sub-parameters. Overall mean rating was 5.0 (SE=0.76, N=4) with ratings for sub-parameters ranging from 0---10 (Figure 3.2). This rating implies existence of moderate conditions for water availability for the animals.

An important factor is the kind of water available. Other sub-param**in**eters depend on this   source of water. Ratings for availability of perennial source of running water was 0 (SE=0, N=7) indicating non-availability.
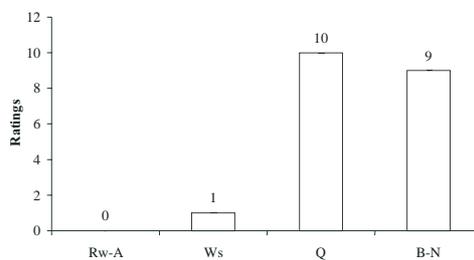
Rw-A: Running water availability
Q: Quantity of water drinking/day

Ws: Source of water (drinking and bathing)
B-N: No. of times bathing/day

Figure 3.2: Mean ratings for water parameters.

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Bathing is an important routine for the elephant. There are reports that it improves skin health and helps in cooling during prevalence of high temperatures (Shoshani and Eisenberg, 1982)[†]. Mean rating for water source (for bathing and drinking) is 1.0 (SE=0, N=7) implying the absence of uncontaminated running water. Also, the use of tankers to supply water for bathing indicates lack of sufficient space such as a lake or pond and insufficient quantity for the animal to completely immerse itself.

Sleep
Animals sleep between 12:00 midnight and 3:00 a.m. and this feature is rated assuming that elephants are active during the day and sleep for around 4 h during the night. Wild elephants spend nearly 80% of their time walking and grazing (Sivagensan and Johnsingh, 1995; Kane et al., 2005). All the elephants were given an opportunity to sleep (Mean rating=10, SE=0, N=7). The rating for sleep duration was 7.5 (SE=0, N =7) suggesting sleep for 3---4h.

However, good rating values need to be considered in the context on restriction of movement imposed on the animal. All the animals were chained for a minimum of 20 h. Restricted movement and lack of activity add to the stress of the animal as can be seen in the section on behaviour.

Opportunity for exercise
Elephants are walked for 5 km in a 2 h period every day. Walking is important to maintain the animal's health by regulating weight, obesity and in trimming the animal's nails (Clubb and Mason, 2005). All the elephants were allowed to walk (Mean rating=10, SE=0, N=7) for two hours every day. However, it should be noted that the animals were housed in the middle of a metro city where conditions such as suitable terrain, variation in substrates to help maintain foot health (Fowler, 2001) [††] or ample space, are lacking.

Interaction
The animals are allowed interaction among themselves, though details of the kind of interaction among specific individuals are not available. However, all the elephants are chained for more than 20 h a day.

All the animals are allowed to interact with other elephants (Mean rating=10, SE=0, N=7). This rating needs to be considered in the context of absence of free movement of the animals by being chained for more than 20 h. Brockett et al. (1999)[††] report that chaining diminishes (among other related and important factors) natural socializing among the animals. Also, aggressive interaction among the animals may be stressful considering the restricted movement.

Observed Behaviour
Behaviour of the male, Lucky Prasad (45 years) was reliable. One female elephant, Lucky (15 years) was controlled using a spiked chain on its leg, indicating that the animal was not calm. Ganga, the youngest elephant, was very restless. Stereotypic behaviour of medium intensity was expressed by all the female elephants in the form of swaying their bodies.

The use of such chains is considered extreme as it is a source of constant pain for the animal and may lead to sores or open wounds in the foot due to rubbing against the skin, causing further distress in terms of health and/or psychological welfare of the animal.

All the female elephants exhibited stereotypic behaviour (Mean rating=0, SE=0, N=6) in the form of moving their bodies. Mean rating for intensity was 2.5 (SE=0, N=6) implying medium level of stereotypy. Reports mention the practice of chaining animals being linked to occurrence of stereotypy (Brockett et al, 1999) [††] and a decrease in stereotypic behaviour in circus elephants when left unchained (Gruber et al., 2000) [††]. All the observed animals were chained for more than 20 h a day.

Work

The elephants were used in three shows per day. Each show involving the elephants lasted for 30 min. Three acts were performed: 'Pooja' for 10 min., playing cricket for 10 min. and a procession of all the elephants with a lady on the trunk of the leading animal, for 10 min. Mean rating for work type was 0.0 (SE=0, N=7) implying performance of unnatural work. The purpose of maintaining elephants in circuses is to make them perform in front of an audience. Performing in this circus involved such activities as doing 'pooja', holding garlands and walking one behind the other with a human performer sitting on the leading elephant's trunk. This is repeated three times a day as long as the circus is performed.

While the work itself may not be strenuous, repeated performance of an unvarying routine with no access to free movement; or any change in daily activity following this performance and restriction imposed on independent socializing and other natural behaviours, would affect the psychological well-being of the animals by way of expression of listlessness, stereotypy, etc. Stereotypy was exhibited by all the female elephants in the circus.

Provision of food

All the elephants were stall fed with the following feed:

      a. Sugarcane---three tons in two days
      b. Paddy---50 bundles in two days
      c. Roti---using 5 kg of wheat flour
      d. Ghee---100 g or 1 kg in two days

During summer, they were said to be given leaves of the peepul tree, banyan tree or 'Bargat' and bamboo. Mean rating was 0.0 (SE=0, N=7) implying provision of only stall feeding for all the animals. Stall-fed animals are unlikely to access the range of food eaten by free—ranging animals in natural forest conditions or even in semi-natural conditions. Hence, a low rating value has been assigned (Figure 3). Mean rating value for number of food items provided was 1.75 (SE=0, N =7), implying lack of proper provisioning of food.

Reproduction

Except Anarkali (30 years), none of the female elephants was in oestrus cycles. The male elephant, Lucky Prasad, exhibiting 'musth'. None of the elephants, male or female, was allowed to mate. The exception was Anarkali, which had given birth to Ganga in 2001. The ratings was designed to reflect animals in healthy reproductive condition. The occurrence of oestrus cycles was rated with low values implying poor reproductive health. Mean rating for cycling status was 1.67 (SE=0.40, N= 6) with only one elephant Anarkali (30 years), said to be cycling even though the mean age of the elephants was 18.2 years (SE=0.61, N=6).

Reproductive status has been adversely linked to chronic or intermittent stress (Moberg 1985)††, social suppression within the elephant group (Abbott, 1989)†. The lone female which was cycling, Anarkali, had given birth to one calf named Ganga, which is also working in the circus. However, there are no documents to support the claim. After this birth, no birth has been reported from any of the elephants, including Anarkali. The single male elephant, Lucky Prasad (40 years), was said to exhibit signs of 'musth' without showing any behavioural problems during this period. However, it was not provided any opportunity for mating.

Health

There are no records of the health status of the animals, even though samples of the animals' blood were said to have been tested. A local veterinary doctor was treating the animals when the need arose. Based on observations, nail crack of the right front leg of Anarkali and blindness of the right eye of Ganga was recorded. Mean rating for availability of doctor was 10 (SE=0, N =7). All the elephants were said to have access to a veterinary doctor. The same doctor was used to treat all the elephants.

The doctor was also reported to have had experience in treating elephants; thus, rating was 10 (SE=0, N=7). Physiological tests on the blood were done. However, the previous year's records were not available. The youngest elephant in the circus, Ganga (female, 7 years), was blind in her right eye. Records were not available regarding the cause of the blindness.

Blindness, in the absence of a hereditary cause, can be due to:

- Striking with ankush around the eye/eyebrows (Phuangkum et al., 2005, Cheeran, 1997)
- Exposure to high temperatures without any provision of shade resulting in eye problems.

Overall rating pattern

Seven parameters (out of 22) have ratings above 9. However, parameters such as purpose of keeping, chaining duration, running water availability, stereotypic behaviour, work type, and the provision of food, have zero ratings (Figure 3.3). Parameters such as water source, number of food items, and status of cycling have ratings as shown below.
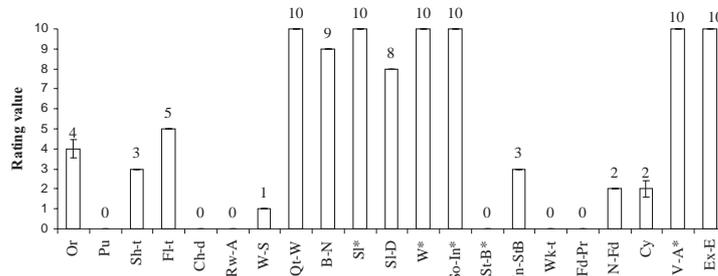
*: indicates Yes-No type parameter with only either one of two scores: 10/0.

Figure 3.3: Ratings for Jumbo Circus elephants.

Or: Origin of elephant	Pu: Purpose of keeping
Sh-t: Shelter type	Fl-t: Floor type
Ch-d: Chaining duration	Rw-A: Running water availability
W-S: Water source	Qt-W: Quantity of drinking water
B-N: Number of times bathing	Sl: Sleep availability
Sl-D: Sleep duration	W: Walk
So-In: Social interaction	St-B: Stereotypic Behaviour
In-StB: Intensity of stereotypic behaviour	Wk-t: Work type
Fd-Pr: Food provisioning type	N-Fd: No. of food items
Cy: Cycling status	V-A: Veterinary doctor availability
Ex-E: Experience with elephants	

Percentage occurrence of ratings provides interesting insights, as both 0 and 10 values contributing 29% (Figure 3.4). However, the bad-to-poor rating values 1 to 5 contribute 32% and the better and best values 6---9 contribute only 9.6%.
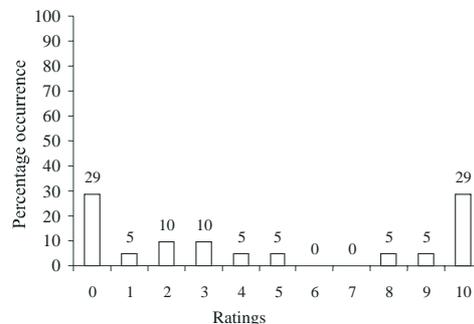
Figure 3.4: Ratings for Jumbo circus elephants.

Mahout socio-economic status

The circus had eight elephant handlers to manage the elephants. Their ages ranged from 18---30 years

a. Education: None of the mahouts had attended school, mean rating was 0 (SE=0, N=8). High rating values are assigned for educated mahouts as being literate helps to achieve better living conditions for the person's awareness of one's rights. In the context of the animal's welfare, being literate helps handlers follow prescriptions to the animal in the event of illness.

b. Wages: The mahouts were paid in the range of Rs.3000---5500/-. This is

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exclusive of housing, food, and medical expenditure. This feature is given a rating of 10.0 (SE=0, N=8).

c. Insurance: Mean rating for insurance coverage was 10.0 (SE=0, N=8) implying that the handlers were covered by insurance.

d. Health: Mean rating for regular medical check-ups of the mahouts was 0.0 (SE=0, N=8) as it was not followed. Regular check-ups are important in the context of transfer of diseases between human and animal. Tuberculosis is often contracted by the elephant from its mahout (Cheeran, 1997). Employees handling elephants are required to be tested for tuberculosis according to guidelines issued by the US based National Tuberculosis Working Group for Zoo & Wildlife Species (2003).

Discussion

Scores between 0.0 and 2.4 constitute worst living conditions and those between 2.5 and 4.9 imply poor conditions. Overall mean rating when considered across individual elephants for each parameter was 4.9 implying poor welfare conditions of the elephants. Forty-three per cent of the ratings were in the category of "bad" condition whereas 14% scores were between 2.5 and 4.9. Scores of 7.5---10, for the elephants, constituted only 33% of all the scores. Of this, 57% of scores derived from the "Yes---No" category which do not highlight details of that particular feature being rated.

A significant feature of the elephants of this circus was the uniform prevalence of the same conditions for all the elephants. When this is viewed in the context of the low rating value given to most of the observed parameters, the need for corrective action to alleviate the elephants' welfare status becomes all the more important. The shelter provided for all the elephants was minimal, with the animals being chained for more than 20 h each day under a 'shamiana'. Even though mud flooring was provided, accumulation of the animals' excreta in that spot led to unhygienic and slippery conditions. There was no access to running water for the animals, with potential for contamination of the water being present. Also, none of the elephants could bathe in a water-body large enough to immerse the animal and provide relief from heat or ectoparasites.

The elephants were made to walk in an environment that lacked space and/or variation in the substrates available for walking. Social interaction is a significant factor in maintaining the health and psychological well-being of an elephant, especially of the females. The group size in this circus was seven elephants with one adult male and six females (range 7---30 years). Among these only two females were reportedly related---Anarakali (30 years) and her daughter Ganga (7 years). Poole et al. (1997) [†] report lack of any strong social bond among unrelated female elephants in an orphanage in Sri Lanka. Thus, an elephant's most significant nature as a social animal is inhibited by the presence of unnatural groups.

Garai (1992)[†] reported formation of special relationships between unrelated females in three zoos which was restricted to just two females rather than including the entire group. The occurrence of stereotypic behaviour in all the female elephants

needs urgent corrective action from a welfare perspective. Work type was unnatural to the elephants' natural behaviour. This can be a source of stress in two ways:

- Training the animal to perform this behaviour might involve harsh methods.
- Animal well-being, in the form of psychological stress, may be reduced by the performance of repetitive, unchanging and unnatural behaviour.

Food provisioning for all the animals was in the form of stall feeding, without any opportunity for free-range browsing by the elephants. Free-range feeding behaviour not only adds to the diet, but also provides a platform for the expression of natural behaviours among the group members. It also leads to natural and healthy exercise in search and preparation of food material such as stripping leaves, peeling bark off trees, dusting grass and a host of food---related activities.

The lack of occurrence of oestrus cycles among adult females indicates serious health and welfare deviations. No elephant, except for Anarkali, has been allowed to mate (no proof available). This is also true for the single male in the group. Health status of the elephants is rated based on the observations recorded at the circus. There are no records of any previous medical history of the animals, even though the animals had access to a veterinary doctor. Noticeable aspects among the animals are blindness in the youngest member of the elephant group (Ganga, 7 years) and nail cracks in Anarkali.

The poor state of welfare of circus animals is echoed in the following report by Bist et al. (2001):

"The circus elephants are used to entertain the public. But they do not appear to have a promising future. Circus companies in India are constantly struggling for their economic survival and they have to face tremendous criticism from animal welfare activists for subjecting their animals, including elephants, to unnecessary pain and cruelty….".

Mahout wages could support a family of three—four. Insurance cover is provided. However, the mahouts are all uneducated. No routine medical Checks ups are available for them. They do not wish their children to pursue their profession.

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†: Original not seen

Section 4 :

Captive Elephants in "Royal", "Rambo", "Rayman" and "Great Golden" Circuses - Management and Welfare

Executive summary

Elephants act as attraction to children and bring additional revenue to circuses and hence are employed. Keeping this in mind, the welfare of the animals, especially those such as elephants that are not domestic, assumes importance.

This report aims to assess the welfare status of elephants used in circuses in the state of Maharashtra through a study of the parameters reflecting the animal's captive conditions. Elephants belonging to four circus companies—Great Royal Circus at Thane, Rambo Circus at Ahmednagar, Rayman Circus at Kalwa, Kharegaon and Great Golden Circus at Mumbra, Thane—were observed and their handlers interviewed to collect relevant data.

Management practices adopted regarding space, shelter, interaction, feeding, bathing, work type and other daily routines were investigated.

Welfare status of an animal was measured in terms of a number of variables: physical, physiological and behavioural. Each variable/parameter was rated on a 0---10 scale for its suitability to the animal. Zero represented the bad situation and ten, the good. A similar rating scale for mahout/cawadi is used. High rating values imply suitable economic, social and other living conditions.

The elephants have been purchased from a temple in Kerala and the Sonepur Mela in Bihar. Mean rating for source of animal is 2.5 indicating purchase/transfer of the animal across a cross-section of owners. High ratings are attributed only to those animals which are born in captivity and those that experience a less drastic shift in their living conditions.

Mean age of the animals kept in these circuses was 27 years, ranging from 5 to 42 years. There were 16 female elephants and the mean age was 29 years, ranging from 14 to 42 years. Ages of males ranged from 5 to 28 years.

Most of the elephants in the circus surveyed were housed in tents, the same being also the source of shade for the animals. Mean rating for shelter type - related parameter is 2.5 indicating poor shelter for all the animals.

Tap water is used as a source for drinking and bathing and the bathing place was the enclosure itself for all the six animals. Mean rating for water– related parameter was 5.1 with 78% of the ratings occurring between 3 and 5.

The animals were walked around the tent. Walking was done in the morning for some time and the time of day was not fixed for the other animals.

Interaction was allowed in the enclosure (tent) for a mean duration of 22 h in a day; mean number of animals for interaction was 2.7; and the distance between the animals varied from 1 to 6 ft.

The elephants were made to work in accordance with circus timings, which begin from 1 p.m. They were put to work every day, except when the circus had to shift to a new location. Score for work type was 0.0.

All the animals were stall fed and the tent (shelter) was also the feeding place. Mean rating for provision of food is 0.86, with all animals getting a score of less than 3.

Stomach pain, worms or gastro-intestinal problems are reported for the elephants. Toe nail cracks and foot rot is reported for some animals, and rating for the occurrence of disease and injury is 0.0.

Mean rating considered across all individual scores across all parameters is 4.6, with 58% of individual ratings occurring in the range 0--- 5.

The experience for mahouts ranged form 7 to 30 years and experience with a particular animal ranged from 0.5 to 20 years. Mean salary was Rs. 41,250 per year ranging from Rs. 30,000 to Rs. 60,000. All the mahouts used tools to control their animals and the preferred tool used was the stick pike. Mean rating for mahout welfare parameter is 5.1.

Mean overall funds required per animal per year is Rs.1, 20,125 and mean annual manpower cost alone is Rs. 43,000.

Introduction

This section aims to assess the welfare of elephants used in circuses in the state of Maharashtra through a study of the parameters reflecting the animal's captive conditions. This includes an assessment of the socio-economic conditions of the animal's handler. Elephants belonging to four circus companies—Great Royal Circus at Thane, Rambo Circus at Ahmednagar, Rajman Circus at Kalwa, Kharegaon and Great Golden Circus at Mumbra, Thane—were observed and their handlers interviewed to collect relevant data. Eighteen elephants, belonging to these four circuses, were observed and their keepers/managers were interviewed to collect relevant data. Rating values for 47 parameters (inclusive of sub-parameters) for the elephants have been presented. Ten parameters for mahouts/cawadis have been rated (see section 1 for survey methods and data analysis for more details).

Population status

Mean age of these animals was 27.4 years (SE=0.19, N=18) ranging from 5---42 years. There were 16 female elephants, mean age being 28.8 years (SE=0.19, N =16) ranging from 14---42 years. The age of males ranged from 5 to 28 years.

Purpose of keeping

When an animal is maintained for commercial use in unnatural conditions, its welfare is reduced due to the imposition of alien living conditions and the possibility of over-exploitation for commercial gain. Mean rating was 0.0 (SE=0.0, N=16)

Source of elephants

The elephants have been purchased from a temple in Kerala and from the Sonepur Mela in Bihar. The change in conditions which an animal undergoes as a consequence of being sold/transferred to different owners implies a change in the way the animal is taken care of with each change of hands. High ratings have been given for animals that are captive-born, followed by those that experience a less drastic shift in their living conditions. Mean rating is 2.5 (SE=0.0, N=16) indicating purchase/transfer of the animals across owners.

Shelter/enclosure

Sixteen of the elephants were housed in tents in the circuses observed and the elephants were kept for a mean duration of 22 h (N =14) in the enclosure. The tent was also the source of shade for the animals. The enclosure is cleaned 2---12 times a day using different implements such as broom, spade and rake. Ten of the enclosures did not have seasonal variation in temperatures. Six were open type of shelters.

Living conditions for the animal in terms of physical space is rated across six sub-parameters. Overall rating for shelter is 5.1 (SE=0.41, N=6) with mean rating for individual elephants in the range 4.3---6.5. Percentage occurrence of overall rating for each elephant indicates 67% of the animals given a score between 6 and 7. This suggests the existence of 'moderate' shelter conditions for the animals.

However, this score has to be viewed in terms of the high rating given to the sub-parameter—shade availability. This was a sub-parameter with only two possible scores: 0 or 10, irrespective of the kind or extent of shade/sunlight available. Excluding

This sub-parameter overall mean rating was 4.1 (SE=0.48, N=5) with 89% of ratings getting a score less than 6.0 (Figure 4.1).
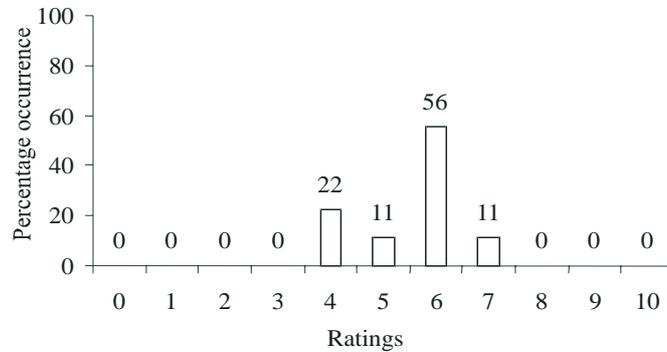
Figure 4.1: Overall rating of elephants for shelter

An important aspect of captivity is the shelter type provided to the animal. The provision of a shelter or enclosure has been rated based on the type of shelter-- whether it resembles forest conditions or is a structurally enclosed space, and on the materials used in building the enclosed space. Mean rating of 2.5 (SE=0.0, N=18) indicates poor shelter type for all the observed animals. The size available to the captive animal was rated with the maximum value given to the animal allowed to free range and lower values for any size less than 5000 m^2. Mean rating is 0.0 (SE =0.0, N =12). All the observed elephants have earthen flooring. Hence, mean rating is 10.0 (SE =0.0, N=18). Keeping animals within an enclosed space makes it important that the hygiene is maintained by regular cleaning. Mean rating of 4.8 (SE=0.13, N=18) with 56% of the animals getting a score less than 3, implies poor hygiene (Figure 4.2)

T: Shelter type   SS: Shelter size
FT: Floor type   SA: Shade availability
ShT: Shade type   SH: Shelter hygiene
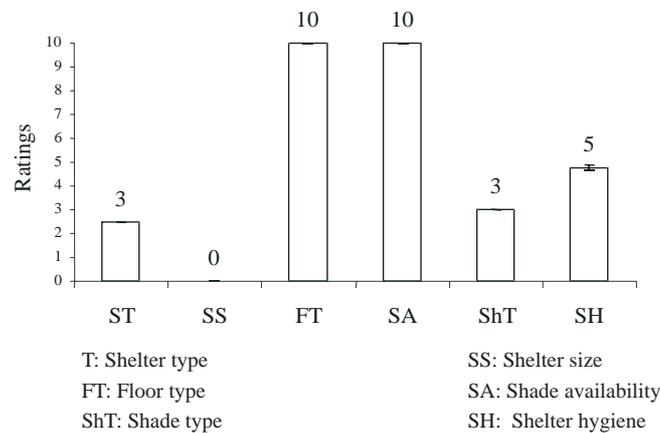
Figure 4.2: Ratings for shelter sub-parameters

Water

Tap water is a source for drinking and bathing and the animals drink water 3---7 times a day. The bathing place is the enclosure itself for six animals. For seven elephants, it is near the tent or outside the circus premises. A bathing place was built for four animals. Coconut fibre was used as a scrub.

An important factor in the assessment of the welfare of captive elephants is the availability of and access to water. This parameter is rated across seven sub-parameters. Overall mean rating is 5.13 (SE=0.88, N=6) with 78% of the ratings for individual elephants occurring in the range 3— 5 (Figure 4.3).
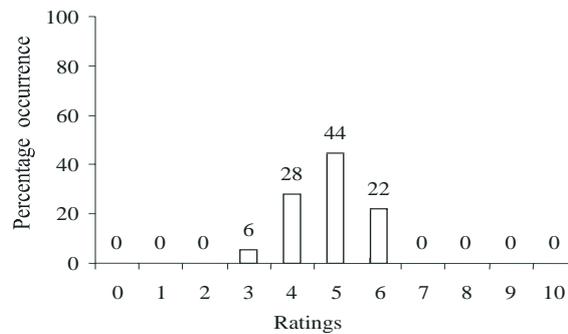
Figure 4.3: Overall rating of elephants for water.

Running water through the year is of paramount importance. Running water reduces the incidence of contamination for which stagnant water sources are prone. Mean rating is 9.2 (SE=4.8, N =13) with 92% of the animals having provision of running water and only one does not have access to this facility.

The provision of running water needs to be viewed in the context of its ready accessibility to the animal. Sources of water that are not easily accessible to the animal have been given low rating values. Mean rating is 3.0 (SE =0.0, N= 12) with water being supplied through taps for all the animals. None of the observed circuses had tested the quality of water given to the elephants. Mean rating is 0.0 (SE=0.0, N =17). Use of hard and abrasive materials, e.g., Plastic brush or brick has been given lower ratings (Figure 4.4). Use of natural materials has been given a high rating. Mean rating is 10.0 (SE=0.0, N=9).
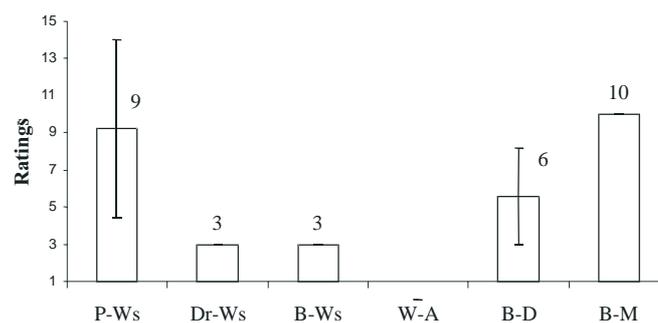
P-Ws: Availability of perennial source of running water   Dr-Ws: Source of drinking water
B-Ws: Source of bathing water   W-A: Water analysis status
B-D: Bath duration   B-M: Bathing materials used

Figure 4.4: Ratings for water sub-parameters

Walk/Sleep and physical exercise

The animals were walked around the tent. Walking was done for 1---2 h in the morning time and the time of day was not fixed for other animals. The sleeping place forms an integral part of the physical environment of the animal. Its mean rating is 2.5 (SE=0.0, N =18). Allowing the elephant to walk on suitable Terrain or time of day is significant as they are subjected to long periods of inactivity or unnatural activity. Mean rating Is 10.0 (SE=0.0, N= 18).

Social interaction

Interaction was allowed in the enclosure (tent) for a mean duration of 21.8 h (SE=0.26, N=16). Mean number of animals for interaction was 2.7 (SE=0.2, N=16) and The distance between the animals varied from 1 to 6 ft. Provision for social interaction among the animals is a feature of significance considering the social nature of elephants in the wild. Opportunity for interaction was assessed using four sub-parameters such as the sex of the group, the distance between the animals, etc. Overall mean for interaction is 8.21 (SE=0.73, N=4) with 82.4% of the animalgetting a score between 8 and 9 (Figure 4.5).

Figure 4.5: Overall ratings of elephants for social interaction.

Mean rating of 7.8 (SE=0.5, N=18) with 78% of the animals being allowed an opportunity to interact (Figure 4.6) indicates group size replicating the environment found in the wild. Mean rating of 6.2 (SE=0.16, N=17) implied the presence of male---female or all female groups, with restricted movement of the animal due to lack of free-ranging opportunity.

OI: Opportunity for interaction   HI: Hours of interaction
GS: Group size   ID: Interaction distance

Figure 4.6: Ratings for interaction sub-parameters.

Chaining

Twelve of the eighteen animals were chained in more than one region—on both fore legs or one fore leg and one rear leg. The restriction imposed on free movement of the animal is a conspicuous feature of most captive elephants. This is rated across three sub-parameters: whether the animal was chained or not, the chaining region and whether it is allowed to free range at night. Overall mean rating is 0.1 (SE=0.3, N=3) with all the sub-parameters getting a rating less than 2 (Figure 4.7).
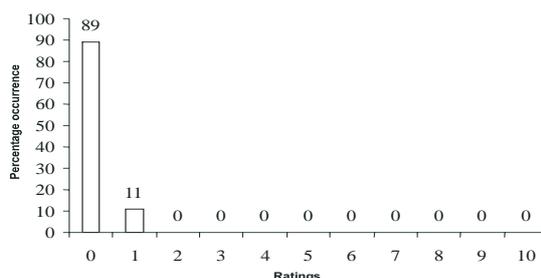
Figure 4.7: Overall ratings of elephants for chaining.

The elephants which were allowed to free range were given high ratings. Mean rating was 0.0 (SE=0.0, N=16) with all the animals being chained. Animals which were chained in more than one region were given low rating values. Mean rating was 0.3 (SE=0.17, N=17) with all observed animals getting a score less than 3. Working animals are let out to range free at night when they are not put to work. All the observed animals were not allowed to range free at night (Figure 4.8). Mean rating was 0.0 (SE=0.0, N=9).

F/CS: Free-ranging / Chained Status   CR: Chaining region
FR-N: Free-ranging at night
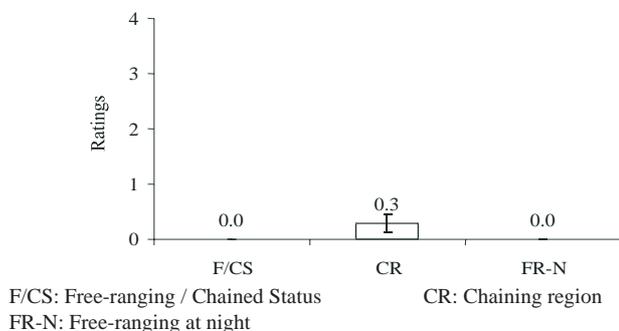
Figure 4. 8: Ratings for chaining sub-parameters.

Observed behaviour

The observed temperament was as follows:

    a. Quiet: 9
    b. Nervous and undependable: 6
    c. Undependable and quiet: 3

The elephant Nitya (female, 14 years) was said to be aggressive. Bahadur (male, 28 years) is aggressive towards his mahout, and none of the animals observed (N=12) were reported to have injured or killed people. Expression of abnormal behaviours such as stereotypy can provide important insight into the welfare of a captive animal. Behaviour of the animal was rated across five sub-parameters. Overall mean rating was 5.4 (SE=1.0, N=5) with 61% of elephants getting a rating from 3 to 5 (Figure 4.9).
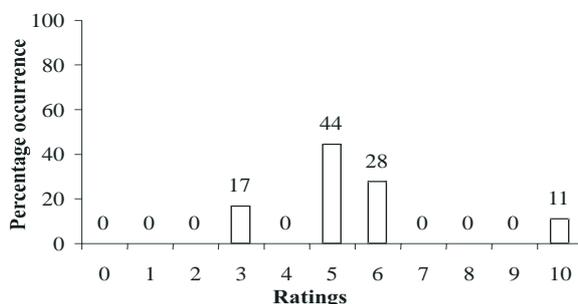
Figure 4.9: Overall rating of elephants for behaviour.

The behaviour of the animal has been rated in terms of interaction with its human handlers or keepers. An animal which is calm or quiet is given a higher rating than the one which is nervous or unpredictable. Mean rating was 5.0 (SE=0.55, N=18) with 50% of the animals getting a score of zero. Low ratings were given for expression of aggression towards people/other animals. Mean rating of 8.6 (SE=0.53, N=14) shows absence of aggressive behaviour. Mean rating is 0.0 (SE=0.0, N =15) with all the observed animals exhibiting stereotypic behaviour (Figure 4.10).
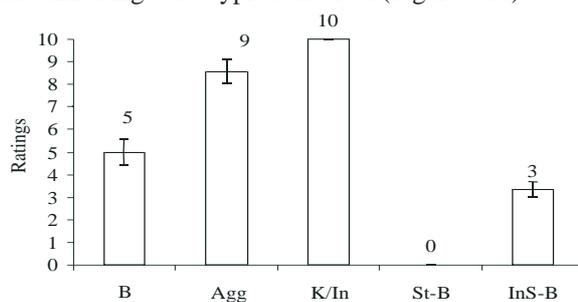
B: Observed behaviour   Agg: Aggression towards people/animals
K/In: Incidents of killing/injuring people   St-B: Occurrence of stereotypic behaviour
InS-B: Intensity of stereotypic behaviour

Figure 4.10: Ratings for behaviour sub-parameters.

Work

The elephants were made to work during the circus timings, which began from 1 p.m. Duration ranged from 30 min to 2 h. They were put to work every day, except when the circus is on the move. The observed animals belonged to different circuses and performed in front of audiences every day. Score for work type is 0. (SE=0.0, N =18). Among the four animals observed, all had access to water during work. Of the eight animals for which data are available, rest was given to four animals while working. None of the animals observed (four in number) were given food while working.

Provision of food

All the animals are stall fed (N= 18) and the tent (shelter) is the feeding place. They are fed throughout the course of the day and the of food offered was dry grass, bread, jaggery, rice, fruits, maize, 'jowar', carrots, cabbage, sugarcane, dry "kadba". Jaggery mixed with rice, vegetables, 'roti', bananas and mineral mixture was given for four of the elephants.

- "Lacto" mix was given for four of the elephants as per the veterinarian's advice.
- The observed animals (N=10) were not allowed to range free for grazing /browsing.

Captive animals provided with only stall feed have been given low ratings as being deficient in the variety of food available while they range free. Provisioning of food was rated across three sub-parameters. Overall mean rating is 0.86 (SE=0.86, N=3) with all the animals getting a score less than 3 (Figure 4.11).
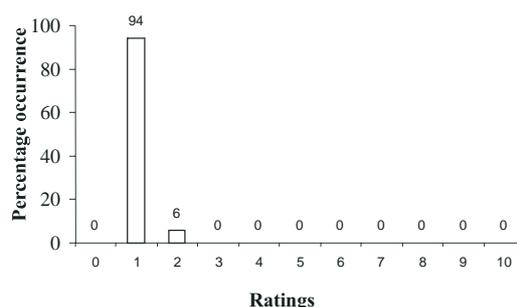
Figure 4.11: Overall ratings of elephants for food.

Animals that were allowed to range free to graze/browse for food and given stall feed were given high ratings. Mean rating was 0.0 (SE=0.0, N =18). The number of food types was rated to assess the range of feed given to the animal. However, an animal that was not allowed to range free for food and provided with stall feed was given a lower rating than one which was given the maximum possible number of food types. Mean rating was 2.6 (SE=0.1, N=18) with all the animals getting a rating less than 5 (Figure 4.12).
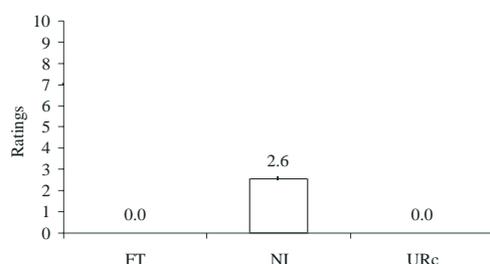
FT: Food type   NI: No of items   URc: Usage of Ration chart

Figure 4.12: Ratings for food sub-parameters.

Reproductive status

Female

Reproductive health is considered to be an indicator of the welfare status of an animal. This parameter was rated using such factors as whether the animal was in oestrus cycle or not, allowed to mate, number of times pregnant, etc.

- The occurrence of oestrus cycles among six adult females was reported to be unknown.
- Rating for exposure to males for breeding purpose was 0.71 (SE=0.45, N=14) with a lone female (Anarkali, 42 years) having been allowed the opportunity to mate.

l   There was no report of observed mating among the elephants sampled (rating = 0.SE=0.0, N=5).

l   The elephant, Anar (female, 42 years), was said to have given birth once. The calf had been sired by a captive male used for begging purpose. Status of the calf is not known.

Male

Among the two male elephants, was a five-year-old male (Surya). Hence, it was considered to be sexually immature. The reproductive status of the other male (Bahadur, 28 years) was 'unknown'. The elephant was isolated during "musth". There were no reports of aggressive behaviour during "musth".

Health status

Stomach pain, worms or gastro-intestinal problems were reported in 16 of the elephants. Toe nail cracks and foot rot was reported in seven and were oiled using mustard or coconut oil. Poor health or frequent injuries maybe caused by the living environment of the animal. Health status is rated across 10 sub-parameters. Overall mean rating is 5.0 (SE=0.7, N=10) with 71% of the elephants getting a score less than 6 (Figure 4.13).
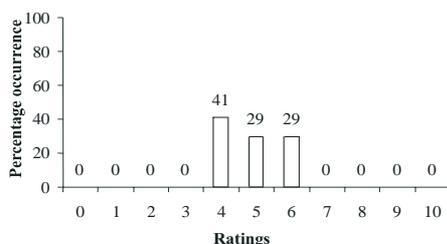
Figure 4.13: Overall ratings of elephants for health status

Ratings for the occurrence of disease or injury is 0.0 (SE=0.0, N =17) with all the animals observed reporting disease/injury. Rating is 0.0 (SE=0.0, N=16) with regular occurrence of disease/injury among all the animals observed. Ratings are designed to reflect the nature of the disease/injury: whether it was harmful and led to further problems and if it was curable or not. Rating is 2.0 (SE=0.0, N=17) implying that it is less harmful/painful, but led to further health problems and is curable. Ratings for vaccination status is 6.4 (SE=0.62, N=14) with 64% of the animals being vaccinated (Figure 4.14). However, even among the animals which are vaccinated,
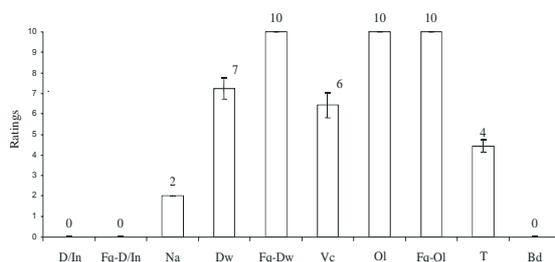
D/In: Occurrence of disease/injury   Fq-D/In: Frequency of disease/injury occurrence
Na: Nature of disease/injury   Dw: Deworming status
Fq-Dw: Frequency of deworming   Vc: Vaccination status
Ol: Oiling done   Fq-Ol: Frequency of oiling
T: Blood/dung/urine tests done   Bd: Body measurement taken

Figure 4.14: Ratings for health sub -parameters.

Immunization was done using Tetanus toxoid. The location of the circus amid human population with possible presence of domestic cattle necessitates immunization against such diseases as Foot and Mouth or Anthrax. However this is not done.

Veterinary care

Availability of doctors and veterinary assistants with experience in treating elephants and their frequency of visits to check the animals are rated. Overall mean rating is 5.8 (SE=1.0, N=5) with 59% of the animals getting rating of 7.0 (Figure 4.15).
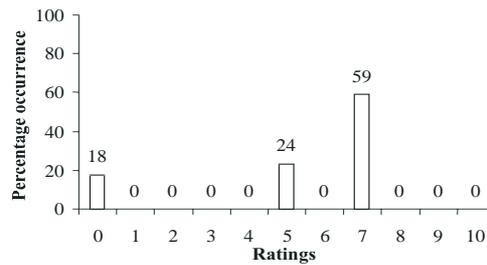
Figure 4.15: Overall ratings of elephants for veterinary facility.

Mean ratings of 8.2 (SE=0.5, N =17) implies availability of veterinary doctor for most of the circuses (82% of the animals had access to a doctor). However, when the doctor's experience in treating elephants is rated, it was 4.0 (SE=0.76, N=10) with only 40% of the animals having access to a doctor with 10 or more years of experience. Ratings for maintenance of service/clinical/other records is 9.3 (SE=0.43,N =15) with 93% maintaining records (Figure 4 . 16).

D-A: Availability of doctor   Ex-E: Experience with elephant
Fq-Vs: Frequency of visit   Vt.-A: Veterinary assistant availability
Rc: Record keeping
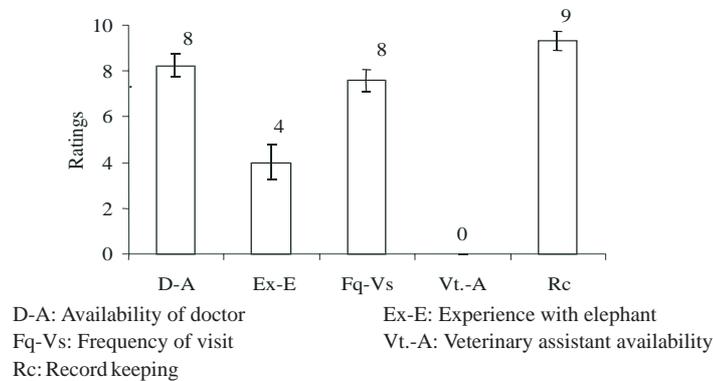
Figure 4.16 : Ratings for veterinary facility sub-parameters.

Mean overall funds required per animal per year was Rs.1,20,125.00 (SE =70.68, N=16). Mean annual man power cost is Rs. 43,000.00 (SE=33.25,N=9) and the source of funds is through the sale of tickets for one of the circuses.

Welfare status of mahout/cawadi

Mahout's experience in this profession ranged from 7 to 30 years and experience with a particular animal ranged from 0.5 to 20 years. All the mahouts interviewed (N=8) had received training in the job for a duration of 1--- 2 years. Mean salary was Rs. 41,250.00 per year (SE=35.3, N=8) ranging Rs. 30,000.00 to 60,000.00.(1US \$= Rs. 43.75). Mean number of children was 4.0 (SE=0.67, N=6) ranging from 2 to 7. All the

mahouts interviewed (N=9) reported using tools to control their animal. The preferred tool used was stick pike.

The welfare of the animal handler may be correlated with the way the animal is maintained. Poor keeper status might be associated with poor or bad handling of the animal and a consequent reduction in the animal's welfare. The elephant handler's (mahout/cawadi) welfare was assessed through his socio-economic profile. Along with this, experience in handling elephants was also rated. A total of 12 mahouts were said to be employed as elephant handlers in the circuses observed. Mean age of the mahout was 31.2 years (SE=0.41, N=9) ranging from 18 to 45 years. Among the elephants observed, the mahout belonging to the Rambo circus was taking care of four adult female elephants. The welfare status was rated across 10 variables. Overall mean rating value was 4.8 (SE=0.6, N= 10) with all the values being less than seven (Figure 4.17).
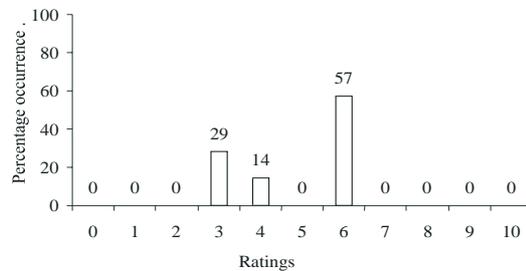
Figure 4.17: Overall ratings for mahouts.

The mahout's experience with the animal that he is handling at present is rated as a percentage of the animal's age. Mean rating was 3.71 (SE=0.85, N=7) with 71% of the handlers getting scores less than 4. Mean rating value was 8.5 (SE=0.75, N=5) with three handlers getting scores of 10.0. High rating   were given considering wages which supported a family of four. Mean rating was 7.2 (SE=0.39, N=10) with 50% of the handlers getting scores between 8 and 10. High rating values were given if the handler spent a greater proportion of a day with the animal. Mean rating was 10.0 (SE=0.0, N =7). Eight per cent of the mahouts interviewed did not have any insurance cover (Figure 4.18). Mean rating was 2.0 (SE=1.1, N=5).
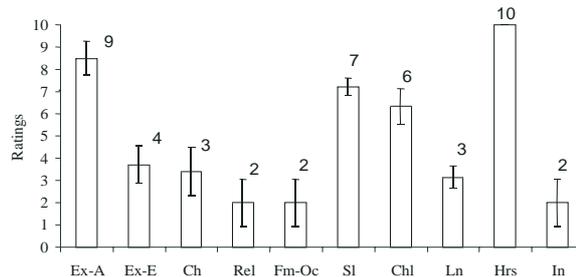
Ex-A: Experience as mahout (as% of his age)   Ex-E: Experience with a particular elephant
Ch: Reason for choosing this profession   Rel: Has mahout relatives
Fm-Oc: Family occupation   Sl: Salary paid
Chl: Number of children   Ln: Languages known
Hrs: Hours spent with the elephant   In: Insurance cover available

Figure 4.18: Ratings for mahout sub-parameters.

The mean rating value considered across all individual scores and all parameters was 4.6 (SE=0.08, N=695) with 58% of individual rating occurring in the range 0---5. The mean rating for the mahout, considered across all individual scores and all parameters, was 5.12 (SE=0.26, N=62). Comparison of elephant and mahout welfare rating show that both are in a similar welfare status (Figure 4.19) and substantial improvements have to be made to reach a moderate or satisfactory welfare rating for both.
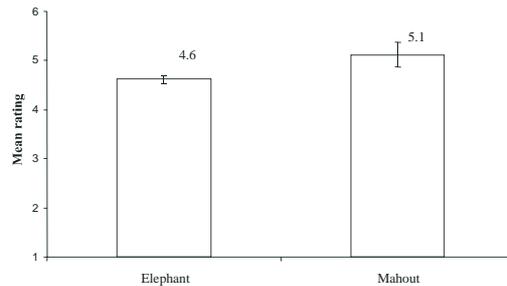
Figure 4.19: Comparison of mean ratings.

Ratings less than 5 indicate poor welfare status. Overall ratings for elephant welfare were biased towards 0 to 4.9 (Figure 4.20).
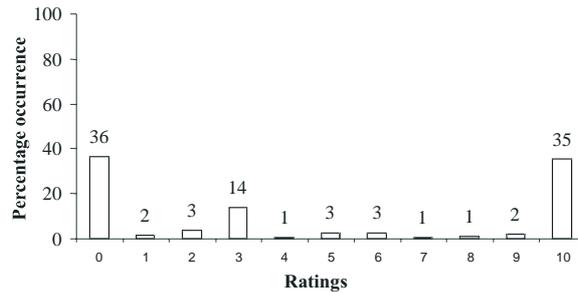
Figure 4.20: Ratings for elephants across all parameters.

Discussion

Ratings less than 5 indicate poor welfare status.

The following factors are responsible for the low ratings:

- A significant feature common across all the circuses observed was the duration for which the animal was kept in its enclosure. The animals were kept there for a mean duration of 22.1 h a day.

- Studies on wild elephants have shown that about 80% of their time is spent on foraging and walking (Sivaganesan and Johnsingh, 1995, Kane et al., 2005). On the contrary, elephants in the circuses spend 87% of their time being housed in a shelter; and they have only about two hours a day allowed for work. The confinement of the animals results in low ratings for the shelter type, shelter size and other associated aspects.

- Water was available through a tap, but this sacrifices the animal's freedom to bathe/drink when it wants. Other uses of water such as an elephant's thermo regulation and maintenance of healthy skin is also jeopardized (Shoshani and Eisenberg, 1982)[†].

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- Even though the animals are reportedly walked around the circus premises, they may have poor foot conditions and health due to lack of variation of substrates (Fowler, 2001[††]).

- As elephants are housed together, they have access to interaction. However, as they are always chained, natural interaction and play behaviour are inhibited. Brockett et al., (1999)[††] also reported that chaining compromises welfare.

- A large portion of sampled elephants (71%) were chained/tied in more than one part of their body. Spike chains were used on five individuals although it is banned by law. Spike chains are banned as they cause abrasions; also injuries and continuous pain (imposed by the spike chain) could lead to psychological stress. Gruber et al. (2000) report lower incidence of stereotypy among circus elephants when not chained.

- Various degrees of stereotypy were exhibited by sampled elephants and higher incidence (or degree) of stereotypy is a result of poor welfare management (Clubb & Mason, 2002).

- Work in a circus involves performance of unnatural behaviour. This repetition of such unnatural behaviour and the complete absence of new activities or changes in work routine lead to apathy and lack of stimulation. This is exacerbated by lack of variety in the stall feed as opposed to free range foraging.

- The regular occurrence of stomach-related disorders among all the elephants observed needs to be noted. Mean duration for which the animals were reported to have been staying in a particular place was 1.78 years. In these places, the floor type was earthen for all the observed animals. Despite the occurrence of suitable flooring, foot-related injuries occurred in 39% of them.

- Mean of 4.6 mahouts were said to have been changed per elephant. Frequent changes of handlers imply a period of stress for the animal as it has to learn to adjust to the ways of the new mahout. The change in mahouts is due to the incentive of increased salary from other circuses.

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[†]: Original not seen

Section 5 :

Captive Elephants in "Royal Circus" - Management and Welfare

Executive Summary

The objective of the investigation was to assess the welfare status of an elephant maintained by the Royal Circus when it was performing at Trichur and Palghat districts in Kerala through evaluation of specific parameters of the animal and its keeper.

The elephant did not belong to this Circus and was rented from a private owner based in Tamil Nadu since the past 5 years. Rating of source of animal is 2.5 for the elephant indicating movement across facilities/management systems.

Shelter for the animal was open type, close to the circus near a private bus terminus and the animal was tied with a 5 m chain and overall rating value for this parameter was 3.3.

The elephant had access to only tap water supplied in buckets and this is given a rating of 3.0.

The elephant was exposed to walks only during the time when taken for begging or when hired for other work and rating for this parameter is 0.0.

The elephant is chained for most part of the day, hence, rating 0.0 is given.

Rating value for provision of food is 0.0 as it is given only stall feed.

The elephant had several instances of foot and gastro-intestinal diseases and its health is rated across seven sub-parameters and overall mean rating is 0.14.

There was also no provision of a veterinary assistant or veterinary care facility, both the parameters were given a rating of 0.0.

Overall mean rating value for the parameters considered is 1.34 and about 80% of values fall within bad category and 10% under poor and only 10% values under the category of satisfactory.

Introduction

The objective of the investigation was to assess the welfare of the elephant maintained by the Royal Circus through evaluation of specific parameters of the animal and its keeper. Data of 30 parameters, representing the welfare of a single elephant kept in this circus, was collected by observation and interview. As no data on mahout welfare was available, no parameter related to their welfare was considered to assess (see Section 1 for survey methods and data processing).

Source of elephant

The elephant did not belong to this circus. It has been 'rented' from a Tamil Nadu-based owner for the past 5 years. Low rating are given for animals that are purchased or gifted or loaned across owners as this might entail change in the way the animal is handled and change in the established social relationships (if any) among the animals. Rating assigned is 2.5 for the elephant indicating movement across facilities/management systems.

Shelter

- Open type, close to the circus near a private bus terminus.
- The animal was tied with a 5 m chain.
- Floor type was mud and grass patches.
- No shade was available for the animal.
- Condition of the tethering site was described as 'bad'.
- Sleeping\resting place was within this space.

Ratings are designed to reflect the natural conditions experienced by the elephants in the wild. Low values imply lack of the same. Overall rating was 3.3 (SE=1.2, N=3), evaluated across three sub-parameters (Figure 5.1).
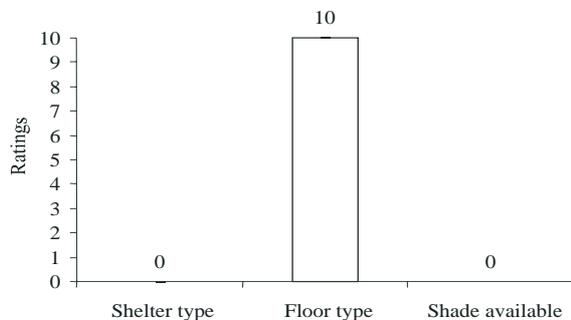
Figure 5.1: Ratings for shelter sub-parameters.

Ratings were high as the animal had access to earthen flooring. The animal did not have access to shade. Hence, a rating of zero is given.

Water availability

The elephant had access to only tap water provided through buckets. This is given a rating of 3.0, a value which reflects the inaccessibility of this kind of water source for the animal.

Sleeping place

The shelter/enclosure also formed the sleeping place. Rating for sleeping place was 1.0.

Opportunity for exercise

The elephant was not taken for walks. If it is had an opportunity to walk, it was during the time when taken for begging or when the animal was hired for other work. Wild elephants are known to be active for almost 20 h/day (Kane et al., 2002). In a captive environment, restricted movement limits the activity of the animal. Hence, opportunity provided specifically for walking, was rated. And it was 0.0.

Social interaction

There is no interaction with any other elephant as it is the only one in the circus. Opportunity for interaction is a factor of immense importance for social animals such as elephants, especially since the elephant in this circus is female. Rating was 0.0 for occurrence of interaction among conspecifics. The value for group size of the elephants also was 0.0.

Chaining

- The animal was chained for 22 hours through the day by its leg.
- It was not allowed to range free.

The elephant was chained for most part of the day, hence, rating assigned was 0.0. There was no opportunity to range free, even at night, when it was not used for work. This feature was also given a rating of 0.0.

Behaviour

- The elephant was said to be calm with no reported incidents of aggression.
- It was said to exhibit stereotypy of medium intensity.

Observed behaviour of the animals was rated based on the ease with which the elephant interacted with people and other animals. Rating was 10.0 with the elephant being described as calm. The expression of stereotypic behaviour by the animals was also rated. The animal was given a rating of 0.0 for this parameter as it was exhibiting stereotypy. A rating of 2.5 was assigned for intensity of stereotypy.

Work

- Performing tricks in front of an audience, walking around the arena for 15 minutes per show.
- Also used for begging from public.
- The animal was used give publicity for the circus

Work forms an indivisible part of a circus animal. The nature of work which the elephant performed was rated. Work type which was alien to their natural behaviour was given low rating value. Mean rating was 0.0

Provision of food

- Provided only stall feed, near the circus tent.
- Food items were only cooked rice and coconut palm leaves.
- Ration chart was not used.

Captive elephants usually do not have the opportunity to range free to browse/graze for food, which forms an important part of their natural life in the wild. A number of studies maintain that wild elephants spend a large portion of their time on foraging

(Kane et al. 2002). Low ratings show lack of the above-mentioned activity. Rating assigned is 0. As it is given only stall feed (Figure 5.2).
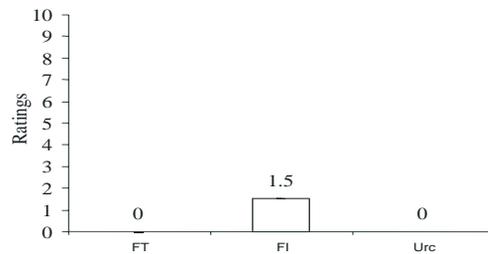
Figure 5.2: Ratings for food.

Reproductive status

ı   The elephant was apparently not experiencing oestrous cycles.

ı   It was not exposed to males or allowed to breed.

The elephant was not apparently experiencing oestrous cycles; hence a rating of 0.0 is given.

Health status

ı   Mis-shapen foot, nail cracks, fresh wounds between nails, chronic wounds on forelegs and foot rot were observed in the animal.

ı   The animal was experiencing bowel instability in the form of constipation and diarorhea.

ı   The animal was anemic as observed from the pale nature of its oral cavity.

ı   White line was noticed around the cornea of the eye.

ı   No vaccination or deworming was done.

ı   Oiling of the animal was also not done

Improper living conditions can affect the health of the captive animal. Status of health was rated across seven sub-parameters (Figure 5.3) with low values designed to show poor status. Overall mean rating was 0.14 (SE =0.1, N=7). The elephant was reported to have several instances of foot and gastro-intestinal diseases. Rating was 0.0. The animal had not been vaccinated for any disease. Rating was 0.0. The situation regarding deworming was the same, for which a rating of 0.0 was given. The application of oil on the animal was not done.
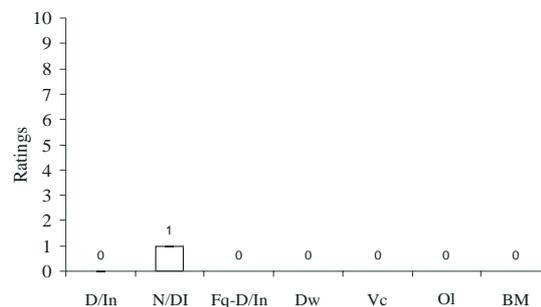
D/In: Occurrence of disease/injury   N/DI: Nature of disease/injury
Fq-D/In: frequency of disease/injury   Dw: Deworming status
Vc: Vaccination status   Ol: Oiling done
BM: Body measurements taken

Figure 5.3: Rating for health sub-parameters.

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Veterinary care

Rating was 0.0 as the circus did not have any permanent arrangement regarding consultation/treatment by a veterinary doctor. There is also no provision of a veterinary assistant or veterinary care facility, both the parameters receiving a rating of 0.0. Record keeping and other aspects related to it and body measurements were also not taken.

Overall rating pattern

Overall mean rating was 1.34 (SE=0.06, N=31), and about 70% ratings fall under zero (Figure 5.4) implying bad welfare conditions.
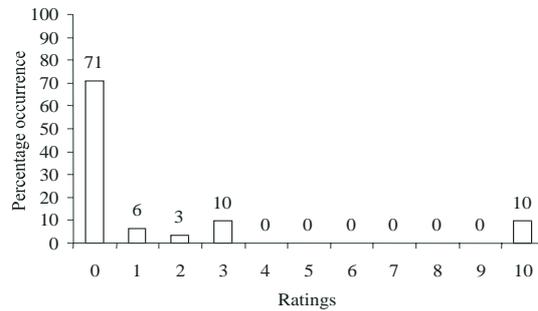
Figure 5.4: Ratings for elephant Laxmi.

Distribution of ratings

About 80% of values (Figure 5.5) fall within bad category and 10% in poor. Only 10% values are satisfactory.
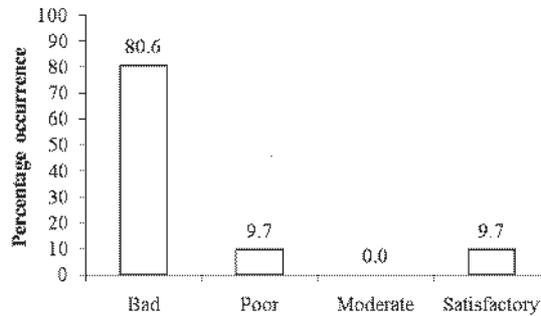
Figure 5.5: Distribution of ratings.

Mahout

The mahout appointed for the elephant was not around and a young person (20 years) was said to be handling the animal. He was affectionate towards the animal.

Discussion

Overall mean rating of 1.34 suggests bad welfare conditions of the elephant. It is common knowledge that elephants, especially females, live in groups of related individuals. The occurrence of 'family groups' consisting of mothers and their offspring has been reported (Sukumar, 1994). Despite this obvious feature of their lives, the maintenance of single, female elephants in un-natural physical conditions around human habitation with severe restriction on their ability to move freely even within a circumscribed surrounding is unwarranted.

The physical and social environment experienced by elephants in the wild was conspicuous by their absence for this elephant.

Parameters in the poor to bad category is :

ı Shelter: There was no suitable shelter. The animal was exposed to sunlight as no shade was available. Mean temperatures in both circus locations ranged from 25 to 35°C (in the region of 40° C at Palaghat). Thermoregulation in large-sized mammals has been reported to be a function among other variables, of the behaviour of the animal (Langman, 1996). Chaining of the elephant for more than 20 hours a day effectively reduced the animal's ability to choose a suitable place for itself.

ı Water: Use of buckets to provide water meant that the animal could not access it whenever it needed. It had to depend on its handler to provide the same.

ı Social isolation: Maintenance of a single animal ensured absence of conspecifics for interaction. Coupled with this fact was the expression of stereotypy by the elephant. Stereotypy was exhibited in greater frequency among socially isolated elephants (Kurt and Garai, 2007). The expression of stereotypy is considered to be an indicator of poor welfare condition.

ı The acyclic nature of an adult female represents abnormal physiological condition of the animal. Bearden and Fuquay 2000) report that non-social stress can also lead to absence of normal oestrus cycles in females.

ı Treatment of illnesses or injuries of the elephant depended on the availability of a veterinary doctor on site. This implies absence of basic veterinary care for the animal, especially in case of an emergency.

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[†]: Original not seen

Appendix 1:

Welfare parameters and their rating scale used for elephants and handlers from circuses

	Source of elephant	
	Variables	Rating value
A	Captive born	10
B	Orphaned/rescue	5
C	Purchased/received/transferred/unknown	2.5
D	Captured	1

	Purpose of keeping	
A	In semi-natural state, no commercial interest	10
B	In semi-natural state for patrolling	8
C	In semi-natural state for kunki	6
D	As a status symbol in natural conditions	5
E	For commercial use in natural conditions	2.5
F	Unnatural and for commercial use	0

	Enclosure/shelter type	
A	Free ranging-natural shade	10
B	Free ranging within any man-made enclosure	1
	With thatch	5
2	With concrete	4
3	With tin/plastic sheet/asbestos	3
C	Shelter as a structurally enclosed space	2.5
D	No man-made structures, no free range, natural conditons	1.0
E	No natural conditions + no man-made structures	0.0

	Duration of free range	
A	Free ranging (max.) 20 h	10
B	18 h	9
C	16 h	8
D	14 h	7
E	12 h	6
F	10 h	5
G	8 h	4
H	6 h	3
I	4 h	2
J	2 h	1
K	0	0

	Flooring	
A	Earthen	10
B	Concrete/any hard surface	0

	Shade availability	
A	No shade=0	0
B	Shade available=10	10

	Shade type	
A	Free Ranging (natural shade)	10
B	Free ranging within any man-made enclosure	
I	Wit thatch	
II	With concrete/	4
III	With tin/plastic sheet/asbestos	3
C	Shade as a structurally enclosed space	2.5
D	No natural conditions+no man-made structures	0

Drinking and bathing source

A	Availability of running water (river)	10
B	Large lakes/reservoirs/water holes	5
C	Smaller water bodies like tanks, ponds	4
D	Tap water (Running)	3
E	Buckets, pots, etc and tankers	1
F	No water	0

Water test done or not

A	Yes	
B	No	

Place of sleep

A	Sleep (natural conditions)	10
B	Sleep within any man-made enclosure	
C	With thatch	5
D	With concrete	4
E	With tin/plastic sheet/asbestos	3
F	Sleep in a shelter as only structure + no natural conditions	2.5
G	Tied with a 10 m chain (animal's movement is restricted)	2.5
H	</=1m chain	0
I	No natural conditions +no man-made structures	

Walking

A	Natural/free range	10
B	No walk	0

Interaction -Yes/No

A	Yes	10
B	No	0

Group size

A	Free-ranging conditions within a group, interaction of ideal group size	10
B	No free ranging but ideal interaction conditions	8
C	No free-ranging, all females	7
D	> Adult females with few sub adults better than all adult female	6
E	One adult male and 3—4 adult females	5
F	All adult males	4
G	Single	0

Interaction (in hours)

A	24	10
B	22.5	9
C	20	8
D	17.5	7
E	15	6
F	12.5	5
G	10	4
H	7.5	3
I	5	2
J	2.5	1
K	0	0

Chaining status

A	Yes	0
B	No	10

Region of chaining

A	One leg with long chain (10 m)	5
B	One leg, chain length unknown	2.5
C	One leg with short chain	1
D	Two legs/leg and neck/all body	0

Behavior

A	Quiet/docile/calm/predictable	10
B	Aggressive	0
C	Undependable/unpredictable	0
D	Predictable	10

Stereotypic behavior

A	Yes	0
B	No	10

Intensity of stereotypy

A	Low	5
B	Medium	2.5
C	High	0

Work

A	No + free ranging	10
B	Patrolling	8
C	'Kunki' for human--animal conflict mitigation	6
D	Safari	5
E	Timber	2.5
F	Standing 'pooja'	1.25
G	Procession	0.625
H	Blessing & begging	0

Food

A	Free ranging + stall fed=10	10
B	Only free ranging	9
C	Only Stall fed	0

Type of food (No. of items)

A	Forest food with supplement	10
B	Forest food only	8
C	No forest food, only varieties *	5
	Number of items divided by 2	

Use of ration chart

A	Yes	10
B	No	0

Reproduction
Female, cycling
A	Yes	10
B	No	0

Exposed to male
A	Yes	10
B	No	0

Mating observation
A	Yes	10
B	No	0

Male, 'musth'
A	Adult -yes	10
B	Adult No	0

Handling of "musth"
A	Isolated + both leg chained=0	0
B	Long chain tied to one leg only=5	5
C	Allowed to free range, no mgt. Or managed as normal as on other occasions	10

Occurrence of disease/injuries/medical problems
A	Yes	0
B	No	10

Frequency of occurrence of disease
A	Regular	0
B	Occasional	5
C	Rare	8

(Health status) Nature of disease/Injury
A	Harmful, painful, leads to low health status, non-curable or chronic	0
B	Less harmful/painful, but leads to health problems, non-curable	1
C	Less harmful/painful, but leads to health problems, curable	2
D	Leads to no further health problems, treatment status unknown	3
E	Leads to no further health problems, non-curable	4
F	Leads to no further health problems, but not easily cured	6
G	Easily cured	8

Deworming
A	Yes	10
B	No	0

Deworming frequency
A	Regular	0
B	Occasional	5
C	Rare	2.5

Vaccination

A	Yes	10
B	No	0

Vaccination done

A	Regularly	10
B	Occasionally	5
C	Rarely	2.5

Oiling

A	Yes	10
B	No	0

Blood, urine, dung sample

A	Yes	10
B	No	0

Body weight measurement

A	Yes	10
B	No	0

Body measurement

A	Yes	10
B	No	0

Veterinary care: Availability of veterinary doctor

A	Yes	10
B	No	0

Veterinary assistant

A	Yes	10
B	No	0

Veterinary care: Availability of veterinary doctor

A	Yes	10
B	No	0

Veterinary assistant

A	Yes	10
B	No	0

Maintenance of service, clinical and other records

A	Yes	10
B	No	0

Mahout

Total experience with this elephant (in relation to elephant's age)%

A	Above 40-- 50%	10
B	30-- 40	7.5
C	20-- 30	5
D	10-- 20	2.5
E	5-- 10	1.25
F	2-- 5	0.625
G	1--2	0.3125
H	0	0

Total experience as a mahout (in relation to his age)%

A	Above 40-- 50%	10
B	30--- 40	7.5
C	20--- 30	5
D	10--- 20	2.5
E	5--- 10	1.25
F	2--- 5	0.625
G	1--- 2	0.3125
H	0	0

Became a mahout because

Tradition & interest		10
A	Interest	9
B	Tradition	8
C	No other job	0

Family occupation

A	Mahout	10
B	Others	0

Related other mahout or cawadi

A	Yes	10
B	No	0

Training

A	By experience	10
B	Through training programme	5
C	No experience/no training	0

Salary (in Rs.)

A	60,000	10
B	40--- 50,000	8
C	30--- 40,000	6
D	20--- 30,000	4
E	10--- 20,000	2

Children

A	2	10
B	2--4	8
C	4--6	6
D	6--8	4
E	8--10	2
F	Above 10	0

Education

A	Minimum 10th	10
B	9th	9
C	8th	8
D	7th	7
E	6th	6
F	5th	5
G	4th	4
H	3rd	3
I	2nd	2
J	1st	1
K	None	0

Language

A	Above 4	10
B	4	8
C	3	6
D	2	4
E	1	2
F	0	0

Number of hours spent/day with elephant

A	Above 12	10
B	8	8
C	6	6
D	4	4
E	2	2
F	0	0

Insurance

A	Yes	10
B	No	0

Consumption of alcohol

A	Yes	10
B	No	0

Timings of consumption

A	No	10
B	After work	5
C	Before work	2.5
D	While working	0

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Compassion Unlimited Plus Action (CUPA) is a non profit public charitable trust registered in 1991 that works for the welfare of all animals. Since 1994, CUPA has worked in close collaboration with government departments and agencies on various projects.

CUPA's mission is to protect animals from abuse and violence and do what may be required in alleviating suffering at the hands of humans. CUPA does not differentiate between pet, stray or wild animals, since both often require assistance and relief from cruelty, neglect and harm. The organization's objective has been to design services and facilities which are employed fully in the realization of these goals.

Asian Nature Conservation Foundation (ANCF) is a non-profit public charitable trust set to meet the need for an informed decision-making framework to stem the rapidly declining natural landscape and biological diversity of India and other countries of tropical Asia. The foundation undertakes activities independently and in co-ordination with Government agencies, research institutions, conservation NGOs and individuals from India and abroad, in all matters relating to conservation of natural resources and biodiversity, endangered flora and fauna, wildlife habitats and environment including forests and wetlands. It participates in, and disseminates information, knowledge and inferences, in professional, academic and public forums.

World Society for Protection of Animals (WSPA) With consultative status at the United Nations and the Council of Europe, WSPA is the world's largest alliance of animal welfare societies, forming a network with 910 member organizations in 153 countries. WSPA brings together people and organizations throughout the world to challenge global animal welfare issues. It has 13 offices and hundreds of thousands of supporters worldwide.

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Elephants in the entertainment industry such as circuses have rarely been studied in a Scientific manner. This report forms one in a series of documents which reveals the actual conditions in which captive elephants live and work. A detailed analysis of the management regime under which they perform and live, with welfare parameters that have been graded objectively and logically, has been presented in this study.

It is believed that science should pave the way for intelligent policy-making without resorting to sensationalism and emotive judgments. This report will help to look closer at years of conditioned responses to the use of wild animals in circuses. The attempt to phase them out would then be a simple, logical step forward in the right direction, helping both conservation and welfare needs of this wild, iconic species, which has existed with man for 3,500 years but has never been domesticated.

Compassion Unlimited Plus Action

ANCF
ASIAN NATURE CONSERVATION FOUNDATION

WSPA
World Society for the Protection of Animals