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An Investigation into the Population Status, Management and Welfare Significance

Surendra Varma, S.R. Sujata and Mahesh Agarwal

Elephants in Captivity: CUPA/ANCF -Technical Report. 7

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Published by
Compassion Unlimited Plus Action (CUPA)
Veterinary College Campus, Hebbal, Bangalore 560 024
www.cupabangalore.org

In collaboration with
Asian Nature Conservation Foundation (ANCF)
Innovation Centre,
Indian Institute of Science, Bangalore 560 012
www.asiannature.org

Title: Captive Elephants of Andhra Pradesh
Authors: Surendra Varma, S.R.Sujata and Mahesh Agarwal

Suggested Citation: Varma, S., Sujata, S.R, and Agarwal. (2008). Captive Elephants of Andhra Pradesh: An Investigation into the Population Status, Management and Welfare Significance. Elephants in Captivity: CUPA/ANCF-Technical Report No. 7. Compassion Unlimited Plus Action (CUPA) and Asian Nature Conservation Foundation (ANCF), Bangalore, India

First limited Edition 2008

Published by CUPA and ANCF

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Preface

Elephant keeping systems vary from providing no natural conditions in a restricted, solitary environment to those that provide a spectrum of opportunities to express natural behaviours. There are no reports of wild elephants in the state, except recent incidents of wild elephants straying into Andhra Pradesh from Karnataka via Tamil Nadu. There have been elephants moving into the state from southern Orissa as well. Current history, however, does not show any indication for occurrence of a viable population or habitat for elephants in the state.

Exposing elephants to unnatural conditions has consequences on the well-being of the animal as the species is not domesticated. Existing conditions in different regimes were surveyed by categorizing the conditions in captivity into a number of related parameters (see methodology section for more details). Welfare was considered in terms of the deviation in rating from those considered satisfactory by a team of experts. Regarding welfare status, the survey shows about 60% deviation from satisfactory conditions. If one considers individual systems, this value goes above 75%. In relation to this, zoo elephants appear to be in better welfare conditions. Among the elephants kept here, both single elephants maintained by temples and circus elephants seem to be maintained in poor welfare conditions. This is indicative of the fact that these institutions are not suited to keep elephants.

This is the first detailed report dealing with population status, management and welfare of elephants in captivity in the state.

The report has four sections:

1. Deals with overall population status, management and welfare of captive elephants in the state. The first chapter along with the executive summary also provides recommendations for the state.
2. Describes welfare status of Circus elephants exclusively
3. Describes welfare status of Zoo elephants exclusively
4. Describes welfare status of Temple elephants exclusively

Each chapter has a detailed report on the population status, management and welfare conditions, in addition to the Executive Summary. The detailed report is presented in the following sequence: introduction, objective, methodology, results, discussion and references. Depending on the needs and interests of the readers, either the executive summary or the detailed report can be referred to. The knowledge from this report can be used as an indication of welfare conditions for elephants in each management regime. Based on this knowledge, a specific management plan can be developed.

ACKNOWLEDGEMENTS

We thank the Principal Chief Conservator of Forests (Wildlife) and Chief Wildlife Warden of Andhra Pradesh and the Animal Welfare Board of India for the necessary permission for this study. We are grateful to the well wishers of SAHYOG for their support in data collection and WSPA for the financial support for the investigation.

Section 1:
Captive Elephants of Andhra Pradesh

EXECUTIVE SUMMARY

Captive elephants in Andhra Pradesh are maintained by different institutions such as circuses/zoos/ temples. This investigation was undertaken to assess the welfare status of these elephants and the socio-economic status and professional experience of the elephant handlers (mahouts/ cawadis).

Data collected on different aspects was analyzed based on the welfare parameters identified and then rated by a team of experts, from wildlife biologists to welfare activists. This rating was then used to assess the welfare status of elephants and mahouts/cawadis. The expert ratings (ER) for a given parameter were compared with mean rating (MR) to identify the deviations from the ER.

Mean age of the elephants kept under all regimes together, was 39 years. Elephant keeping in Andhra Pradesh appeared to be female biased, and unlike males, there is not much variation in the age class distribution of female elephants kept in the state.

Mean ratings show a deviation of 75% from the expert rating for the purpose of keeping circus and temple elephants as the elephants were said to have been purchased/ gifted/ transferred across facilities.

Circus elephants were tied under temporary canvas tents throughout the day with shade being provided by the tent itself. Zoo elephants were kept within enclosures with concrete floor at night and left free in outside enclosures with natural substrate during the day. The temple elephant was kept within an enclosed space with earthen flooring. The housing environment was rated considering shelter type, size, floor type and shade availability. Deviations from E-R were 83%, 38% and 51% respectively for circus, zoo and temple elephants.

Circus elephants were provided water through a tanker and bathed near the circus site. Zoo elephants were given water through taps and bathed in an open area. The temple elephant had access to tap water. Circus elephants showed a deviation of 90% from E-R for this feature while it was 49% for zoo elephants and 44% for the temple elephant observed

Group size was limited for circus elephants due to the practice of chaining the animals. Zoo elephants too were faced with the same situation at night as they were chained but in the morning the group of two males and five females were left in their enclosure to free ranging. Circus and Zoo elephants showed comparable deviations (23% and 21% respectively) from E-R. There was 100% deviation for the temple elephant as it was kept singly

Work for circus elephants was performance of an unnatural set of behaviours such as performing “pooja” and standing on a stool, repeatedly for a fixed number of shows. All zoo elephants were used for various types of work: tourist rides/ made to seek donations from the public by their handlers. The temple elephant was used in processions/ for various festivals. Circus elephants showed a deviation of 80% from E-R, while zoo elephants showed 50% and the temple elephant 43% deviation.

Circus and temple elephants were given only stall food without any ration chart being used. Only two zoo elephants were not allowed to browse/ graze, with all being supplemented with stall food. Usage of ration chart was practiced. A deviation of 86% from E-R was observed for circus elephants. Zoo elephants showed 33% and the temple elephant showed 92% deviation from E-R.

None of the female circus elephants were given an opportunity to breed, male reproductive status or musth occurrence was unknown. Female elephants of zoo were provided opportunity to breed. Cycling status for one female was not known. One female had given birth following mating. A deviation of 100% from E-R was observed for circus and temple elephants, this was 31% for zoo elephants.

Toe nail cracks/ foot rot were seen in three circus animals. Deworming/ vaccination or oiling was not practiced. Foot rot/ toe nail cracks were seen in three zoo elephants, all the elephants had been dewormed, and dung sample tests were also was performed. Oiling and taking of body measurements was not practiced. The practice of deworming/ oiling/ vaccination was not followed for the temple elephant.

Circus handlers had a mean experience of 10 yrs in this profession with mean experience of 1.8 yrs with a specific elephant. Zoo handlers had mean experience of 22.5y with mean experience of 18.7yrs with a specific elephant. No data was available for the temple handler

Overall rating for circus elephants considering all sub-parameters together, showed a deviation of 73%, from E-R, for circus elephants. The rating for zoo elephants showed a deviation of 38% and that for the temple elephant was 67%.

Recommendation

As there is no viable habitat or population of wild elephant, there may not be any justification for having captive elephants in this state, as they are primarily kept in unnatural conditions. Total number of captive elephants maintained is very small and these are distributed across different institutions/ management regimes. This then contributes to being the primary cause for unviable numbers and small, unnatural social systems of captive elephants in the state.

Elephant keeping in the state is female biased, with occurrence of ten females as opposed to three males. There is no scope for breeding opportunities in the state, except among a small number maintained by the zoo. This is because of the husbandry routine practiced in other institutions: restriction on movement and use for work in circuses and maintenance of single elephant in temples.

- As there is no scope for breeding and to create near-natural conditions for institutions like circuses/ temples, elephants with these institutions can be brought into a care center which is based on an extensive system of keeping elephants, i.e., in conditions replicating the natural environment.

- The other way to handle this problem would be to increase the number of elephants in zoos with each zoo maintaining a minimum group size that is not expendable for economic considerations. Along with this, facilities in zoos have to be improved in order to reduce the deviations observed. With a more natural set-up, welfare status can improve and reproductive success may be achieved in this population.

The long-term approach should be to ban/ prevent new captive elephants entering the state.

Introduction

Captive elephants in Andhra Pradesh are maintained by different institutions: circuses/ zoos/ temples. The 'Keeping' systems for these animals vary from providing no natural conditions in a restricted, solitary environment to those that provide a spectrum of opportunities to express species-typical behaviours. A survey was undertaken to obtain data on the living conditions experienced by captive elephants in different management systems.

Objective

Welfare of an animal in captivity is governed by the living conditions it is exposed to. These conditions may vary with different management systems.
This study was undertaken:

- To assess the welfare status of captive elephants across different management regimes
- To assess the socio-economic status and professional experience of the elephant handlers (mahouts/ cawadis).

Method

The care of elephants in captivity is said to depend on the knowledge of habits of wild counterparts and application of the same in providing an environment that is as natural as possible (Ferrier, 1947). Wild elephants have been selected across millennia to perform various species-typical activities; the absence of suitable living conditions, in terms of provision for culmination of response to internal stimuli and occurrence of suitable external conditions, may affect the well-being of the captive animal (Veasey, 2006).

Welfare of captive elephants has been assessed in terms of the deviations observed from conditions in the wild for a set of captive conditions: the physical environment, social and behavioural opportunities provided deviations from normal reproductive functioning in adult animals. Conditions exclusive to captivity such as availability and access to veterinary personnel and facility has also been rated as ill-health (chronic/ otherwise) may affect the well-being of the animal.

Data was collected through observation of animal/s and interview of personnel/ management, representing various aspects of the elephant's life in captivity. The data was grouped into different categories (parameters) based on its identity in terms of physical/ social/ managerial/ physiological relevance to the animal. A team of experts, from wildlife biologists to welfare activists, rated different parameters of importance to the welfare of captive elephants (Varma and Prasad, 2008). This rating was then used to assess the welfare status of elephants and mahouts/ cawadis.

Rating method

The rating scale from zero (unsuitable conditions) to ten (suitable conditions) was used to assess the welfare status of captive elephants and their handlers. Experts (both wild and captive elephant specialists, wildlife veterinary experts, managers from protected areas, managers responsible for both wild and captive elephants and other wildlife, personnel from welfare organisations and elephant handlers) were invited to assess the welfare based on welfare parameters and their significance through an exclusive workshop conducted on the subject (Varma, 2008; Varma, et al., 2008;

Varma and Prasad, 2008). Experts rated a total of 114 welfare parameters covering major aspects of captivity.

- The experts, based on their concept of the importance of a particular parameter to an elephant, developed a rating for each parameter. For example mean expert rating was 8.0 (SE= 0.5, N=29) for the parameter 'floor' and 9.0 (SE=0.4, N=31) for 'source of water' was arrived at from the ratings suggested by each expert.
- A mean rating for each parameter, across all the participating experts, has been used as the Experts' Rating (E-R) which represents the importance attached to a parameter i.e., for a parameter with 8.0 as the maximum value, only 2.0 (25%) deviation and a parameter with a maximum value of 9.0, only 1.0 or 10% from the prescribed norm is considered acceptable.
- For example, if an elephant is exposed only to natural flooring, the animal receives a rating of 8 and for entirely unnatural flooring the value is 0; if animal is exposed to both natural and unnatural flooring, the value is 4 (as 8+0/2= 8/2= 4). If an elephant is exposed to a natural water source, such as a river, it receives a value of 9; if the source of water is large lakes or reservoirs, it gets 4.5. A value of 3.5 is assigned for small water bodies like tanks and ponds. Tap water (running) gets 2.5 and if only buckets, pots, and tankers are in use, then the allocated value is 0.5. This rating is then averaged across all individuals in that institution to get a Mean Rating (M-R) for that feature. Thus M-R represents the actual situation existing for the elephant/s.
- Therefore, using the maxima given by experts as a base, a rating scale starting from zero to the particular maximum value for that parameter has been used and the data for each animal was collected in a given regime (for example, forest camp or temple).
- In this investigation, variables which represent a common feature of a condition in captivity have been grouped to form a parameter. The variables have been termed sub-parameters. For example, the variables shelter type, shelter size, floor type in the shelter; all represent different aspects of the physical space provided to the elephant. Hence, they are grouped together to form the parameter "Shelter" and each constituent variable is a sub-parameter. In this investigation, the E-R for a parameter (say, shelter) represents the mean of E-Rs across all related sub-parameters. The Mean Rating (M-R) for a parameter is the mean of M-Rs across related sub-parameters and denotes welfare status of existing conditions on the ground for the particular parameter.
- The number of such related parameters (sub-parameters) varies for each regime.
- Results have been presented comparing E-R and M-R as a means of comparing the extent of deviation present in the parameters observed. The difference between E-R and M-R (expressed as percentage) indicates deviations from the prescribed norm.
- For handlers, the difference between the maxima provided by experts (E-R) and existing status (M-R) has been used to indicate the professional/ socio-economic status of value to the handler and his elephant.
- N refers to number of sub-parameters observed. N refers to number of individuals

Results depicting ratings for each management regime for a particular parameter have been presented. These ratings represent the average across sub-parameters observed within each parameter. The welfare status of mahouts/ handlers has been assessed by looking at socio-economic parameters and the handler's relationship with his animal in terms of experience, knowledge of commands, etc. Bad or poor handler welfare maybe associated with poor handling of his animal.

Results

Population status

Three management systems, Circus, Zoo and Temple, were selected. The regimes were classified based on the ownership details provided. The distribution of numbers of elephants for each regime was: Circus: 5, Zoo: 7, Temple:1 (At the time this report was written, one elephant, Anarkali (female, 50y) belonging to the zoo, was reported to have died (The Hindu, August 31, 2008).

Mean age of the elephants, considering all regimes together (Figure 2), was 39.2 (SE = 2.7, N = 13) years. Female age ranged from 22 – 50 (N = 10) years while that of males (N = 3) ranged from 23 – 52 years. Elephant keeping in Andhra Pradesh appeared to be female biased, and unlike males, there is not much variation in the age class distribution of female elephants kept in the state (Figure 1)

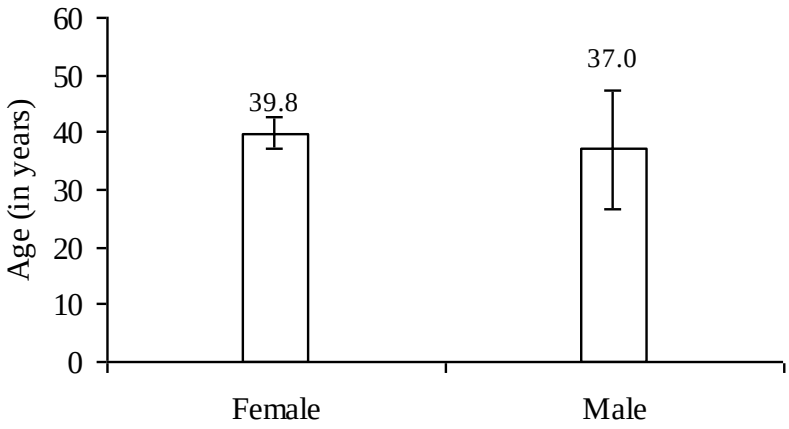
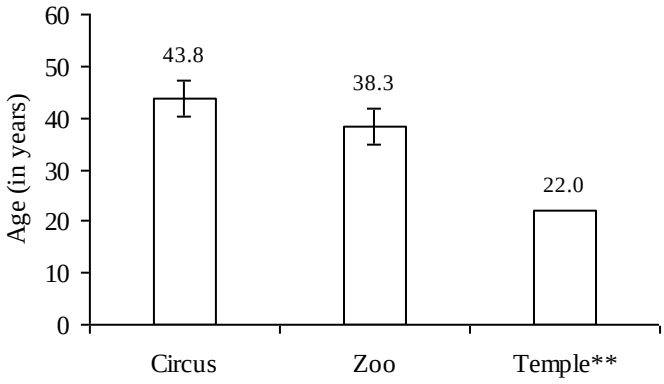


Figure 1: Age-sex distribution of captive elephants across all regimes in Andhra Pradesh



**: Age of single elephant maintained in the temple

Figure 2: Age distribution in different regimes

Source of elephant

The system which an elephant was exposed to before it was brought into its present location is important as transfer across locations/ management systems maybe a source of stress (Clubb and Mason, 2002). High rating indicates captive born animals as these animals are exposed to captive conditions at birth and may experience less stress as compared to an animal that is caught from the wild.

Mean ratings show a deviation of 75% from the Experts' Rating for this feature (Figure 3), for zoo and temple elephants observed (for which data was available), as the elephants were said to have been purchased/ gifted/ transferred across facilities.

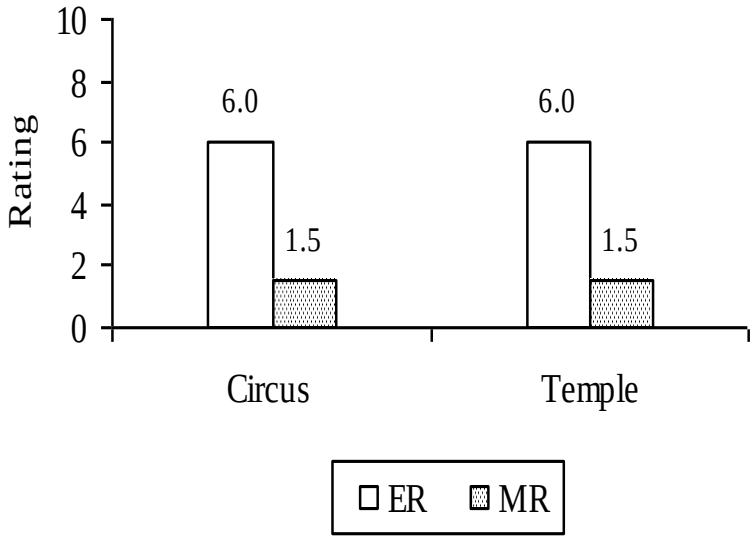


Figure 3: Source of elephants across all regimes in Andhra Pradesh

Shelter

Elephants in the state were exposed to different types of shelters (Figures 4a, b, c, d, e, f and g). Circus elephants were tied under temporary canvas tents throughout the day with shade being provided by the tent itself. Zoo elephants were kept within enclosures with concrete floor at night and left free in outside enclosures with natural substrate during the day. The temple elephant was kept within an enclosed space with earthen flooring.

The housing environment was rated considering type, size, floor type and shade availability. An environment with opportunity to free ranging in forest conditions with sufficient space takes care of all the above features.

Deviation from this kind of environment is given low rating. In confined space encountered in some systems, hygiene maintenance assumes importance considering accumulation of excreta of the animal. Hence, this aspect was also rated. Deviations from E-R were 83%, 38% and 51% respectively for circus, zoo and Temple elephants (Figure 5).

a

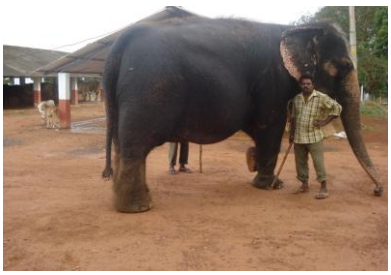
b

c

d

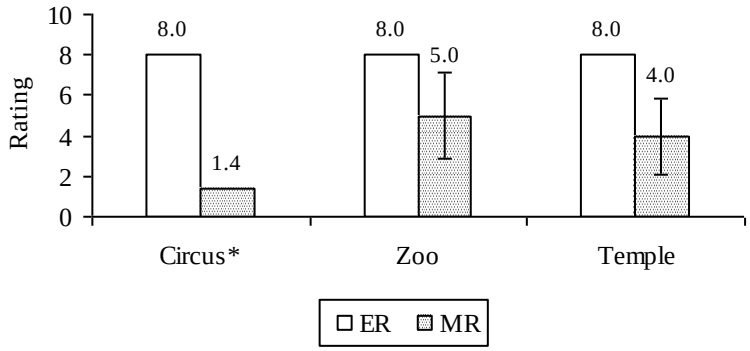
e

f



g

Figures 4a, b, c, d, e ,f and g : Shelter provided for captive elephants in different management regimes, day shelter (a) in zoo, night shelter (b) in zoo, shelters in circus (c and d) and temple (e, f and g)



*: only two sub-parameters considered

Figure 5: Rating for shelter of captive elephants across all regimes in Andhra Pradesh

Water

Circus elephants were provided water through a tanker and bathed near the circus site. Zoo elephants were given water through taps (Figures 6a) and bathed in the enclosure (Figure 6b) or in an open area. The temple elephant had access to tap water (Figure 6c); it was bathed near a borewell source. Tests on water quality were done for zoo and temple elephants. All elephants, across regimes, were scrubbed using hard materials such as plastic scrubbers.

a

b

c

Figures 6a, b and c: Sources of water, tap water provided to hose pipe (a and b), elephant bathed inside the enclosure (c)

Wild elephants have been observed to drink/ bathe at least once in a day (Shoshani and Eisenberg, 1982). Related activities such as wallowing/ dust bathing are said to

aid in maintaining skin health (Kurt and Garai, 2007). Availability and access to running water sources with provision for testing its quality has been considered to represent satisfactory conditions, along with opportunity provided to free ranging, with unrestricted access to water. In conditions where the animal has restricted access, relevant features such as quantity of water provided/ scrubbing materials used while bathing have been rated.

Circus elephants showed a deviation of 90% from E-R for this feature while it was 49% for zoo elephants and 44% for the temple elephant observed (Figure 7).

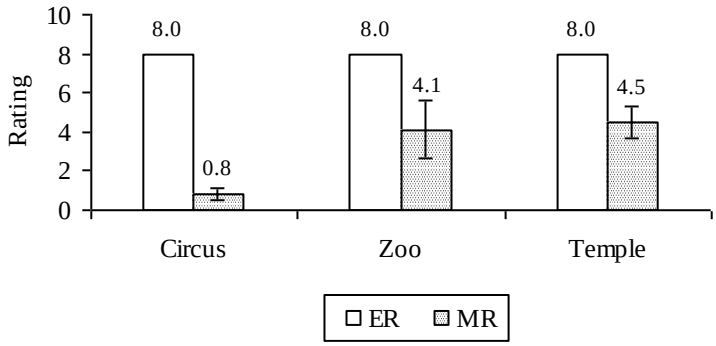


Figure 7: Rating for water for captive elephants across all regimes in Andhra Pradesh

Rest and sleep

The tethering site/ shelter (near the circus) was also the sleeping place for the elephants. Zoo elephants given opportunity to rest were chained within their concrete enclosure at night (Figure 8a) with varying duration of sleep reported for each animal.

a b

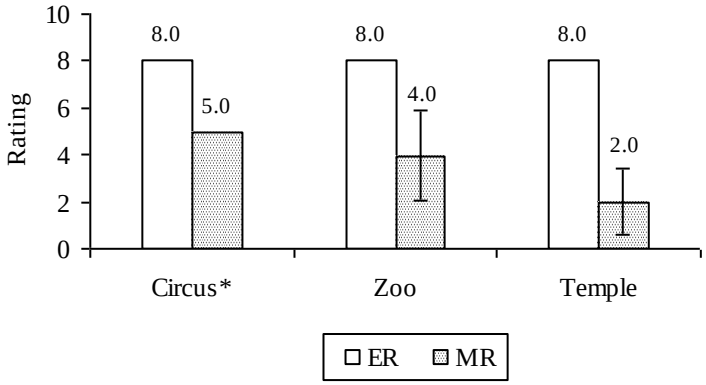
Figures 8a and b: Sleeping locations and positions, night shelter in zoo (a) as sleeping place, sleeping position (b) of an elephant in the shelter in a temple.

For the temple elephant, resting and sleeping place was the same as the shelter (Figure 8b).

Resting and sleeping activities depend on several factors: presence of young in the herd, ambient temperatures (Kurt and Garai, 2007), physical exertion, absence of

opportunities for the animal to perform its normal species-typical activities, etc. Both activities need suitable physical conditions such as appropriate substrates/ duration for normal expression/ continued `health and well-being of the animal.

Circus elephants showed a deviation of 38% from E-R. However, this value was obtained considering only two sub-parameters related to sleep. Zoo elephants showed a deviation of 50% and the temple elephant indicated a difference of 75% from E-R (Figure 9).



* Rating based on two sub-parameters only

Figure 9: Rating for rest and sleep of captive elephants across all regimes in Andhra Pradesh

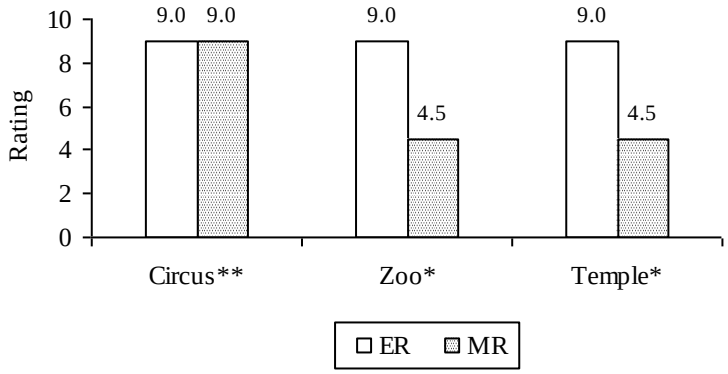
Opportunity to walk

Circus elephants were allowed restricted access for walks of 1-2 hours duration around the circus site. Zoo elephants were walked on tar roads. The temple elephant was also walked on tar roads (Figure 10).

Figure 10: A temple elephant walking on a tar road

Kane et al., (2005) cite several authors to state that wild elephants are active for most parts of a day, engaging in activities such as foraging, staying in one area for a few days only. Captive animals subjected to a confined space may not be able to move across varied habitat or even move within the restricted area.

Data was available for a few sub-parameters only for all the institutions observed, showing a deviation of 50% for zoo and temple, and none for circus elephants (Figure 11).



** Rating based on one sub-parameter only * Rating based on two sub-parameters only

Figure 11: Rating for walk of captive elephants across all regimes in Andhra Pradesh

Opportunity for social interaction

Group size was limited for circus elephants (even though there were five adult elephants) due to the practice of chaining the animals. Zoo elephants too were faced with the same situation at night as they were chained but in the morning the group of two males and five females were left in their enclosure to free ranging (when not being used for work) (figure 12a and 12b).

a b

Figure 12a and b: Sources of interactions for captive elephants from different management regimes, interactions among elephants (a) in zoo and circus, only mahout is source of interactions in temple (b)

Elephants maintain relationships across generations (Sukumar, 2003), with males said to disperse gradually from their natal herds or forming bachelor herds (Poole and Moss, 2008). Isolation has been linked to stress/ abnormal behaviours (Clubb and Mason, 2002). High rating has been given for animals with unrestricted access to conspecifics and opportunity for expression of appropriate behaviour in different social contexts.

Circus and zoo elephants showed comparable deviations (23% and 21% respectively) from E-R. There was 100% deviation for the temple elephant as it was kept singly (Figure 13).

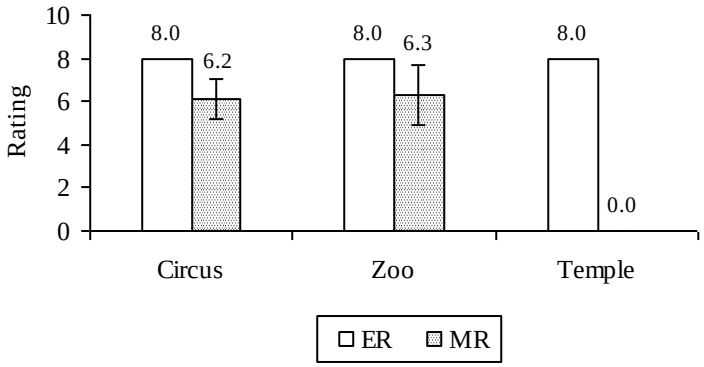
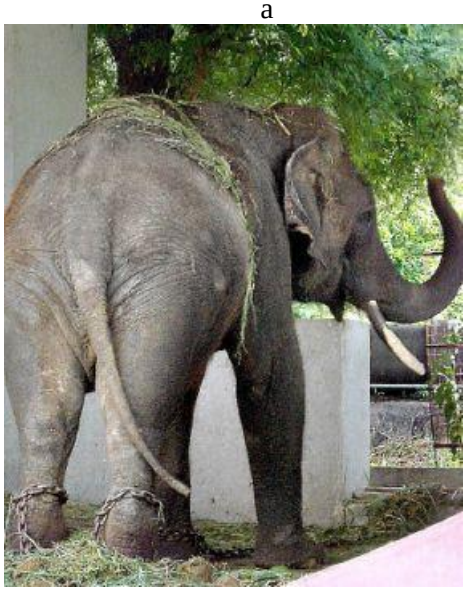


Figure 13: Rating for social interaction of captive elephants across all regimes in Andhra Pradesh

Chaining and chains

a

b



c

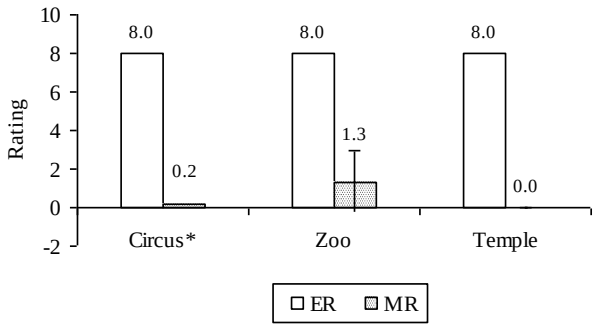
d

Figures 14a, b, c, and d: Types of chains used

All circus elephants were chained throughout the day, with spiked chains being used for three animals. Zoo elephants were chained at night in one fore and one rear leg.

The temple elephant was chained throughout the day, in more than one region of the animal's body, with no free-ranging opportunity (figure 14 a, b, c and d).

Chaining captive elephants in the same region of the body can lead to abrasion-induced injuries (Kurt and Garai, 2007); increased incidence of stereotypy has been observed among chained elephants (Gruber et al., 2000). All the institutions showed more than 50% deviation (Figure 15) from E-R: circus (98%), zoo (83%) and temple (100%).



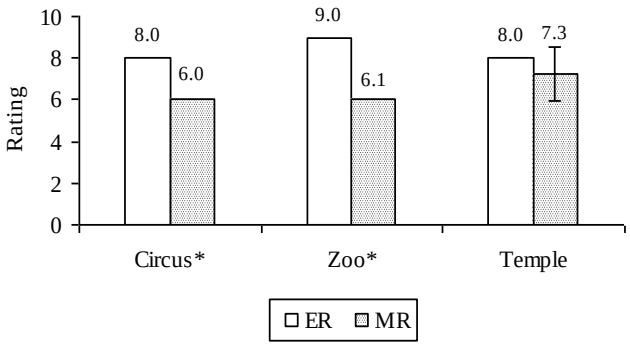
*: Rating considered for two sub-parameters only

Figure 15: Rating for chaining of captive elephants across all regimes in Andhra Pradesh

Observed behaviour

All circus elephants were described as quiet/ reliable with one elephant exhibiting stereotypy. Except for two zoo elephants (described as nervous) all animals were quiet/ reliable. The temple elephant was said to be undependable with no expression of stereotypy

Temperature observed to be "quiet/ calm" may indicate a degree of ease of handling the animal. It however, does not indicate the animal's mental well-being as it could have been conditioned by various factors to be so. Hence, occurrence of abnormal behaviours such as stereotypy has been considered. Even though stereotypy's could be expressed as remnants of past deficient captive environments, its occurrence is an important indicator of welfare of the animal and hence, has been included. Rating for both circus and zoo elephants were considered based on two sub-parameters only, showing a deviation of 25% and 33%, respectively, from E-R. The temple elephant showed a deviation of 9% (Figure 16).

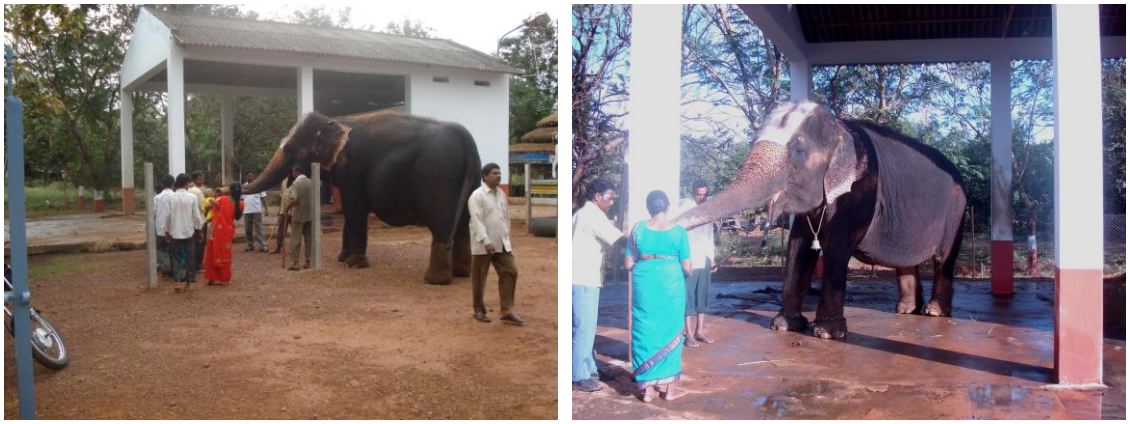


* Rating based on two sub-parameters only

Figure 16: Rating for behaviour of captive elephants across all regimes in Andhra Pradesh

Work

Work was performance of an unnatural set of behaviours such as performing "pooja" / standing on a stool, repeated for a fixed number of shows for circus elephants. All zoo elephants were used for various types of work: tourist rides/ made to seek donation from the public by their handlers. The temple elephant was used in processions/ for various festivals or they are made to bless devotees and beg for money (Figures 17a and b).

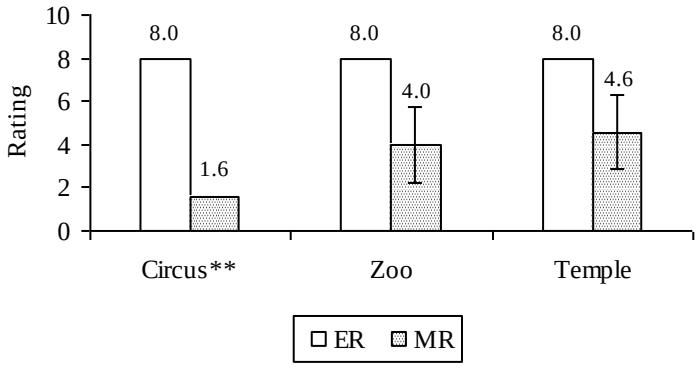


a b

Figures 17a and b: Types of work exposed to elephants, blessing devotees (a) and trained to collect money from devotes (b)

Nature of work performed by the elephant determines the opportunities provided to the elephant to express its natural behaviour. Long work hours under the control of its handler/s ensures deficiency of a natural environment to express species-typical behaviours. Working environment, with unrestricted access to food/ water/ rest/ shade, has also been considered. Absence of work does ensure a favorable captive environment due to factors such as absence of conspecifics / limited space availability or long periods of chaining while working.

Circus elephants showed a deviation of 80% from E-R, while zoo elephants showed 50% and the temple elephant 43% deviation (Figure 18).



** Rating based on one sub-parameter only

Figure 18: Rating for work of captive elephants across all regimes in Andhra Pradesh

Food

Circus and temple elephants were given only stall food without any ration chart being used. Only two zoo elephants were not allowed to browse/ graze, with all being supplemented with stall food (figure19a to 19f). Usage of ration chart was practiced.

a

b

c

d

e

f

Figures 19a,b,c,d,e and f: source and types of food provided, grass (a), green palm leaves (b), food given by a visitor (c) free grazing within the enclosure (d), dry grass (e) and dry palm leaves (f)

Elephants have been observed to feed on a wide variety of plants in the wild (McKay, 1973; Sukumar, 1991), spending major parts of a day foraging (Sukumar, 1991). Food is also manipulated through trunk/ feet/ tusks/ a substrate (Kurt and Garai, 2007), adding to the activity of the animals. High rating has been given for elephants allowed to free ranging to browse/ graze in forest conditions followed by feeding with supplements around the shelter.

A deviation of 86% from E-R, was observed for circus elephants. Zoo elephants showed 33% and the temple elephant showed 92% deviation from E-R (Figure 21).

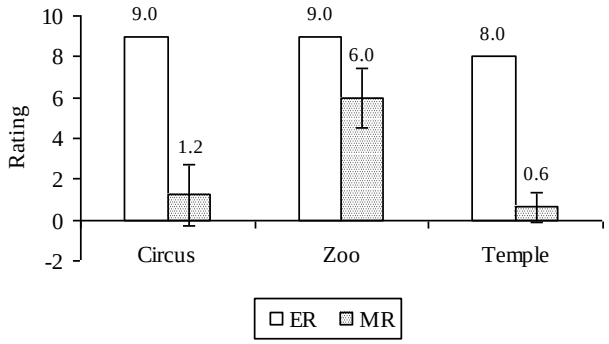


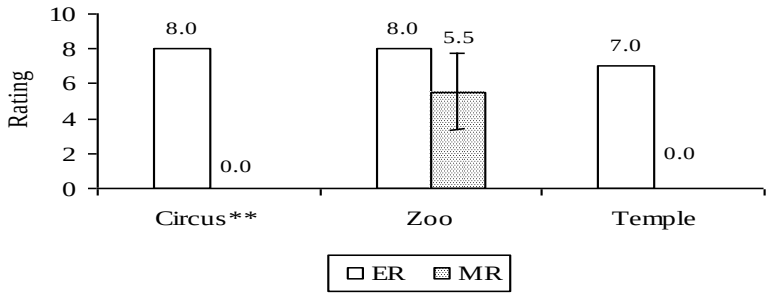
Figure 21: Rating for food of captive elephants across all regimes in Andhra Pradesh

Reproductive status

None of the female circus elephants were given opportunity to breed. Male reproductive status or musth occurrence was unknown. Female elephants of zoo were provided an opportunity to breed. Cycling status for one female was not known. One female had given birth following mating. Musth was reported for one male zoo elephant, the other was said to be reproductively active.

Normal reproductive functioning in adult elephants has been observed when the animals are in a healthy state (Kurt and Garai, 2007). Abnormal reproductive status such as acycling adult females/ high rates of infanticide has been documented in captivity (Clubb and Mason, 2002). The same authors cite several studies linking stress/ absence of mates, among other relevant factors, to abnormal reproductive status.

Female reproductive status has been rated for all three institutions. There was no data available for the lone male in the circus; the temple maintained a single female elephant. A deviation of 100%, from E-R, was observed for circus and temple elephants, this was 31% for zoo elephants (Figure 22).



** Rating based on one sub-parameter only

Figure 22: Rating for female reproductive status of captive elephants across all regimes in Andhra Pradesh

Health and veterinary routine

Toe nail cracks/ foot rot were seen in three circus animals. Deworming/ vaccination or oiling was not practiced. Foot rot/ toe nail cracks (Figures 23a and b) were seen in three zoo elephants, all the elephants had been dewormed, and dung sample test also was performed. Oiling and taking of body measurements was not practiced. The practice of deworming/ oiling was not followed for the temple elephant.

a b

Figures 23a and b: Foot problems observed for an elephant from a temple

Captive elephants are subject to environments that may cause diseases/ injuries not encountered or seen in lesser frequency among wild counterparts. Mikota et al., (1994) state the occurrence of foot related problems to be common, besides the increase of susceptibility to tuberculosis and herpes virus, among other diseases caused by exposure to animals. Hence, preventive health care is considered important in the form of regular foot care/ vaccination/ fecal tests, etc. The rating for this parameter for circus elephants showed a deviation of 100% from E-R. This deviation was 32% for zoo elephants and 75% for the temple elephant (Figure 24).

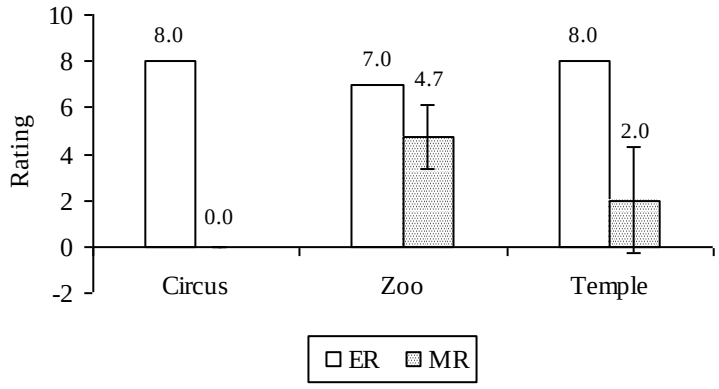


Figure 24: Rating for health and veterinary routine of captive elephants across all regimes in Andhra Pradesh

Veterinary personnel

A veterinary doctor was not available and records were not maintained for circus elephants. Veterinary doctors, assistant and related facilities were available for zoo

elephants. Records were also maintained. There was no doctor attached to the temple elephant and records were not maintained.

Availability of personnel and relevant infrastructure is integral to maintaining the health of captive elephants. Doctors with experience in treating elephants, availability of assistants, maintenance of records and availability of clinic facility are part of the veterinary management protocol. Rating for this parameter showed a deviation of only 1% from E-R for Zoos, while this was 100% for circus and 93% for temple (Figure 24a).

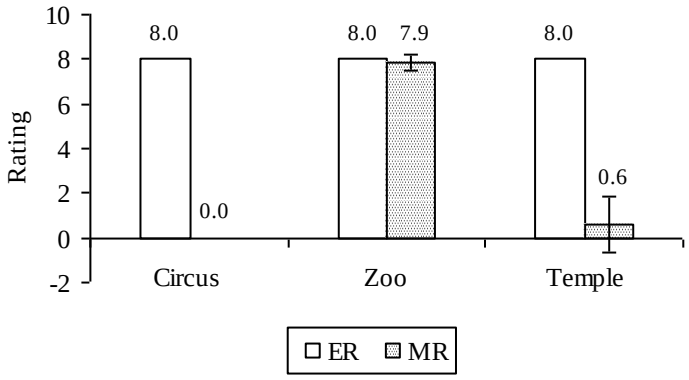


Figure 24a: Rating for veterinary personnel of captive elephants across all regimes in Andhra Pradesh

Welfare status of handlers (mahout/ cawadi)

Mahouts/ cawadis form an integral part of a captive elephant system, especially when the elephants are used for human-oriented work. Their welfare status is thus central to better handling of animals in their charge. Welfare status has been rated considering experience with elephant/s (Figure 25a) socio-economic status, family (Figure 25b), children and other aspects related to the welfare of the handlers. In addition, the mahout/ cawadi's professional experience has been rated as this has a direct bearing on the welfare of the animal.

Professional status

Circus handlers had a mean experience of 10yrs (ranging from 0.3 – 7yrs) in this profession with mean experience of 1.8 yrs (ranging from 0.3 – 5y) with a specific elephant. Most handlers chose this profession as a means of employment. All the handlers used tools to control their animal. Zoo handlers had a mean experience of 22.5yrs (ranging from 12- 35 yrs) with mean experience of 18.7yrs (ranging from 10 - 27y) with a specific elephant. Most handlers joined this profession as it was a family tradition. All handlers used tools to manage their elephants. When mahouts spend a major proportion of their work experience in the same profession, their knowledge of the animal and its habits may improve. Similarly, a person who chooses handling elephants out of a sense of interest may be more committed than one who takes this as a means of employment only. Handlers with good knowledge of commands, who use tools sparingly and with caution as a means of controlling their animal are considered better than those who do otherwise.

a b

Figures 25a and b: Work type related to taking care or controlling of elephant (a) and a handler's family (b)

Circus mahouts showed a deviation in their rating to the extent of 74%, from E-R, while zoo handlers showed a deviation of 43%. No data was available for the temple handler (Figure 26).

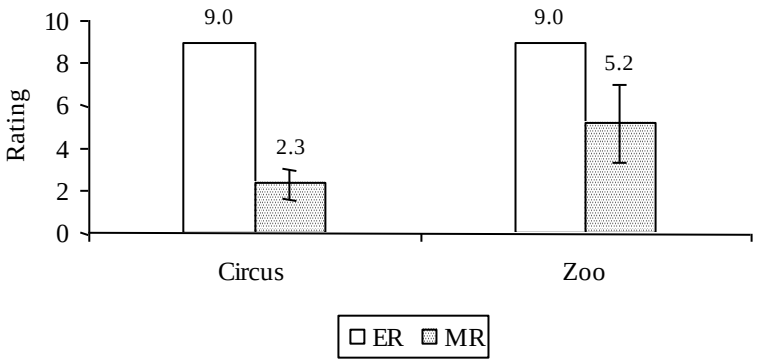


Figure 26: Rating for professional experience of handlers of captive elephants kept across all regimes in Andhra Pradesh

Socio-economic status

All circus handlers were literate, drawing a mean salary of Rs.2500/- per month (ranging from Rs.2000- 3000). None of the mahouts/ cawadis were insured, 50% consumed alcohol. Zoo mahouts/ cawadis were paid a mean salary of Rs. 7995/- per month (ranging from Rs. 4500 – 10,400). All were literate and married with children ranging from 1- 11 per family. All were covered by insurance and most of them were said to consume alcohol.

The economic and social profile of handlers was rated based on relevant features such as: salary drawn, insurance cover provided, number of children in the family, educational status, etc. Rating showed a deviation of 69% from E-R for circus handlers and 34% for zoo handlers. It should be noted that the E-R for zoo handlers was 7.0 (Figure 27).

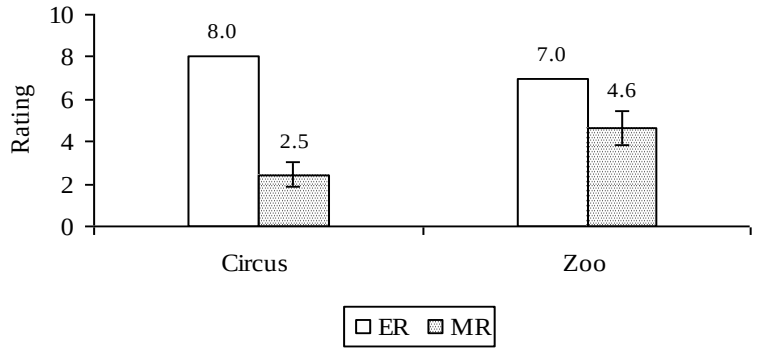


Figure 27: Rating for socio-economic status of handlers of captive elephants across all regimes in Andhra Pradesh

Comparison of overall rating across regimes

Overall rating, considering all sub-parameters together, showed a deviation of 73% from E-R, for circus elephants. The rating for zoo elephants showed a deviation of 38% and that for the temple elephant was 67% (Figure 28). Ratings for circus and temple elephants are comparable with zoo elephants faring better than the other two regimes.

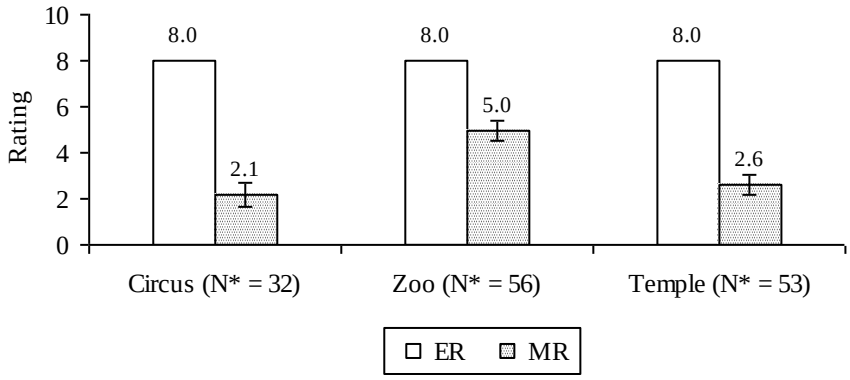


Figure 28: Comparison of overall rating of captive elephants across all regimes in Andhra Pradesh

Distribution of percent deviation of M-R from E-R across regimes

It can be seen from Figure 29 that both circus and temple showed greater numbers accounting for more than 50% deviation from E-R. Greater numbers were seen in Zoo accounting for deviation in the range of 26-50% from E-R (The figure considers only those parameters whose ratings are based on at least three sub-parameters).

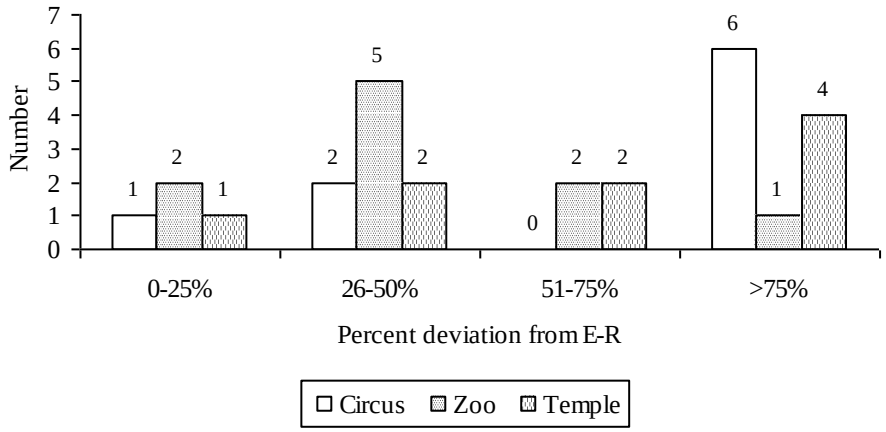


Figure 29: Distribution of percent deviation of M-R from E-R of captive elephants across all regimes in Andhra Pradesh

Discussion

The provision of vast space in keeping with the physical vigor of elephants, the maintenance of complex social relationships across generations in a fission-fusion society with freedom to choose social partners, expression of natural foraging behaviour and provision for mental activity for captive elephants is considered to be integral to their maintenance in an environment free from physical/ psychological suffering (Poole and Granli, in press). All of the above can be achieved, to a certain extent, in an environment that replicates the natural, free-ranging conditions of wild elephants.

The limits of captivity can be stretched to meet those of the wild counterparts, to provide an environment that improves the physical and mental well-being of captive elephants. Rating for welfare status is based on the deviation in captive conditions from those observed for elephants in the wild. Overall rating, showed a deviation of 73%, from E-R, for circus elephants. The rating for zoo elephants showed a deviation of 38% and that for the temple elephant was 67%. Ratings for circus and temple elephants are comparable, with zoo elephants faring better than the other two regimes.

It should be noted that for the thirteen parameters observed, ten parameters showed variance (SE > 1.0) for zoo elephants. This indicates non-uniformity in opportunities provided/ facilities available for the zoo elephants. For the temple elephant, eight parameters observed showed a variance (SE >1.0). For circus elephants, a total of seven parameters were based on rating of only one or two sub-parameters.

While rating for both parameters for handlers of zoos indicated better mean value as compared to circus/temple, variation was observed for all handlers across regimes. Variance of SE < 1.0 was observed for circus handlers for both parameters while the variance of SE > 1.0 was observed for professional experience of zoo handlers, indicating handlers with different professional experience with elephants.

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Section 2:
Captive elephants in Nehru Zoological Park

EXECUTIVE SUMMARY

The maintenance of elephants in zoos entails provision of conditions that replicate to the extent possible, the ecological, behavioural and psychological state of its wild counterparts. Hence, there is a need for a critical appraisal of the captive conditions existing in zoos.

This investigation assesses the welfare status of elephants maintained in Nehru Zoological Park, Hyderabad, through a study of the physical environment as well as provision of a suitable living environment for expression of species-specific behaviours. This also provides some insight into the socio-economic status of handlers who take care of these elephants.

Welfare status of elephants has been measured in terms of the deviation in living conditions experienced by the captive animals when compared with wild, free ranging conditions. The deviation was measured through a rating logic and ratings were graded in the following manner:

- 0 – 2.4: Bad conditions
- 2.5 – 4.9: poor
- 5.0 – 7.4: moderate
- 7.5 – 10.0: satisfactory

The Zoological Park has seven adult elephants with age ranging from 23 – 44 years. Mean age of the elephants was 38.3 yrs, ranging from 35 – 41 yrs. for females and the males aged 23 and 36 yrs.

The elephants had been received or gifted (3 animals)/ purchased (2 animals)/ transferred or exchanged (2 animals) with year of such transactions varying from 1963 to 2005. Mean rating was 2.5 implying transfer across facilities for all the observed animals.

All the elephants were said to be maintained as zoo exhibits. Maintenance of animals in semi-natural conditions along with use for commercial purpose has been given a lower rating. Mean rating was 2.7.

Daytime shelter was an open area of 4 acres with Neem (*Azadirachta indica*) and Rain trees (*Samanea saman*), night time shelter was a RCC shed of size 561.7 sq.ft. with concrete floor. Mean rating was 6.2 showing occurrence of moderate conditions.

All the elephants had access to tap water. Occurrence of water is considered important for wild elephants and the mean rating was 5.1 with 48 % of all the ratings getting a score less than four.

All the elephants were said to be allowed to interact in the open area for 9 h. This parameter was rated using four sub-parameters. Mean rating was 8.0 and about 50% of the values fall under 10.

All elephants were chained at night for 15 hours in the shelter. The mean rating was 1.7 showing occurrence of bad conditions.

Work type was Zoo exhibit, rides, tourism, minor lumber work for festivals; mean rating for this parameter was 5.0 with 52% of all ratings getting a score less than six.

All except the two males were provided both stall feed and allowed to free ranging to browse/ graze within their zoo enclosures, the stall food include grass, fodder, rice (*Oryza* sp.), jaggery, ragi (*Panicum* sp.), salt, sugarcane (*Sacharum* sp.), banana (*Musa* sp.), and tender coconut. Mean rating was 7.2 and 50% of the values fall under 10

Four female elephant's exhibit oestrus cycles, both males are reproductively active and all animals were exposed to the opposite sex. Mean rating for female reproductive status was 6.4 with 35% of all the ratings getting a score less than four.

Foot rot, oral cavity problem, parasites, obesity, fissures, toe nail cracks, respiratory problems, abnormal respiratory sounds and lacerated wounds (in left fore leg and rear leg) are some of the health problem reported for the animals. Overall mean for this parameter was 6.4 with 36% values getting a rating less than four.

The zoo has one veterinary doctor with 21 years experience with elephants, daily visits Mean rating was 9 and 86% values are under 10

Eight handlers take care of the elephants, mean age of handlers was 44.6 yrs, mean number of years of experience of working as handler was 22.5 ranging from 12 – 35 years and mean number of years of experience with given elephant was 18.7 yrs. Except for one mahout, all the handlers were said to consume alcohol. Overall mean rating for handler welfare was 6.1 with 50 % values getting scores between 8 and 10.

Overall mean rating for the elephants in the zoo was 6.2, ignoring availability of veterinary care. Considering only physical, social and physiological status, overall mean rating was 5.7, with ratings less than five contributing 42 % of all the scores.

Introduction

The maintenance of wild animals, such as elephants, in zoos entails provision of conditions that replicate to the extent possible, the ecological, behavioural and psychological state of its wild counterparts. Hence, there is need for a critical appraisal of the captive conditions existing in zoos. The Nehru zoological park in Hyderabad, in the state of Andhra Pradesh was established in 1959. It covers an area of 380 acres within which diverse fauna are maintained for the dual purpose of conservation and education. Among the animals housed, the zoo has seven Asian elephants maintained in a separate enclosure.

Objective

Conditions experienced by animals in zoos, circumcised by a number of limiting factors, may not be the same as those prevalent in the wild.

- To assess the welfare status of elephants maintained in Nehru Zoological park, Hyderabad, through a study of the physical environment as well as a look into the provision of a suitable living environment for expression of species-specific behaviours
- To assess the veterinary care and infrastructure provided for these elephants

The welfare of animal handlers (mahouts) needs to be considered, as poor welfare of a handler may be negatively associated with the way an elephant is treated/ handled.

- To assess the socio-economic status of mahouts as well as their relationship with the animals in terms of experience, methods of animal control, etc.

Method

Elephants have evolved over millennia, its' biology and natural life history pattern being shaped by the complex interaction of different selective forces. Captive conditions need to provide the right environment for expression of species-specific behavioural repertoire and social well-being, using the knowledge gained from field research on wild, free-ranging elephants (Stroud, in press). Welfare status of elephants has been measured in terms of the deviation experienced by the captive animals in the social, behavioural and physical environment when compared with wild, free ranging conditions.

The captive environment has been studied using physical aspects such as provision of shelter, floor type, etc., behavioural features such the animal's temperament, incidents of aggression, social characteristics such as opportunity for interaction with other elephants, etc. Each of these features has been rated on a zero to ten scale with zero representing the worst possible situation and ten implying a satisfactory state, closer to what an animal experiences in the wild.

Ratings were graded in the following manner:

- 0 – 2.4: Bad conditions
- 2.5 – 4.9: poor
- 5.0 – 7.4: moderate
- 7.5 – 10.0: satisfactory

Some of these features have been grouped together to form a parameter. For example: shelter includes sub-parameters such as: shelter type, flooring type, maintenance of hygiene and shade availability. The ratings of sub-parameters have been used to

calculate a mean rating for the parameter. The same rating scale has been used for assessing conditions exclusive to captivity such as availability of veterinary care, veterinary practices followed and facilities provided. Graphs depicting percentage occurrence of ratings, from zero to ten, for a parameter have been presented. The rating for each sub-parameter has also been presented as graphs. The welfare status of the mahout has been rated on the same scale. Mahout's socio-economic condition as well as his relationship with elephants has been assessed.

Result

Population status

The Zoological Park has seven adult elephants (two males and five females) with age ranging from 23 – 44 years. Mean age of the elephants was 38.3 yrs (SE= 3.2, N = 7) ranging from 35 – 41 yrs. for females and the males were aged 23 and 36 yrs.

Source of elephant procurements

All the elephants had been received or gifted (3 animals)/ purchased (2 animals)/ transferred or exchanged (2 animals) with year of such transactions varying from 1963 to 2005. Source of the captive elephant: whether captive born/caught in the wild or transferred across facilities is an indicator of the change in living conditions experienced by the animal. Movement across facilities entails breakage of established social bonds and/ or introduction of unfamiliar and new animals into an established group is potentially a source of stress (Clubb and Mason, 2002). Animals which have been transferred across institutions have been given low rating.

Mean rating was 2.5 (SE =0.0, N =7) implying transfer across facilities for all the observed animals. Mean age at transfer, calculated based on year of transfer and elephant age, was 13.6 yrs. (SE = 4.6, N = 7).

Purpose of keeping

All the elephants were said to be maintained as zoo exhibits.

Maintenance of animals in semi-natural conditions along with use for commercial purpose has been given a lower rating. Mean rating was 2.7 (SE = 0.8, N = 7).

Shelter

- Daytime shelter was an open area of 4 acres with Neem (*Azadirachta indica*) and Rain trees (*Samanea saman*)
- Night time shelter was a RCC shed of size 561.7 sq.ft. with concrete floor
- The shelter was cleaned once in a day with water spray and spade

The Shelter structure is an important feature of a captive animal's life as it is compelled to spend its life within. This was rated using five sub-parameters. Mean rating was 6.2 (SE = 2.3, N= 5) showing occurrence of moderate conditions (Figure 1).

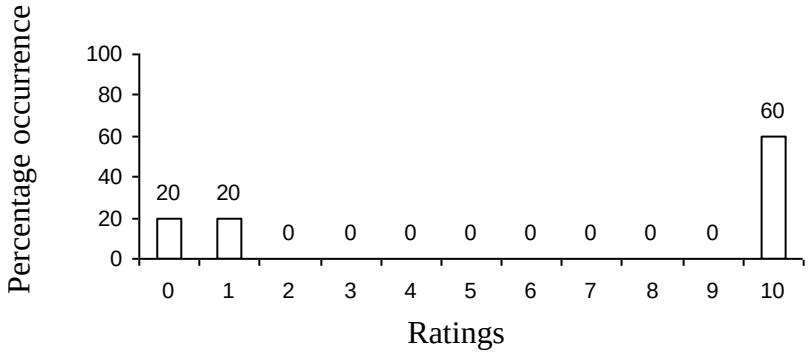


Figure 1: Percentage occurrence of ratings for shelter

Provision of natural conditions, while allowing the animals to range free, was given a high rating. Mean rating was 1.1 (SE = 0.0, N =7) showing existence of bad conditions. Use of natural substrates has been given high ratings while hard substrates are rated low. Mean rating was 0.0 (SE= 0.0, N =7) indicating use of unsuitable substrates at night. Keeping animals confined within a circumscribed area requires regular cleaning to prevent accumulation of animal excreta. Mean rating (Figure 2) was 10.0 (SE =0.0, N =7).

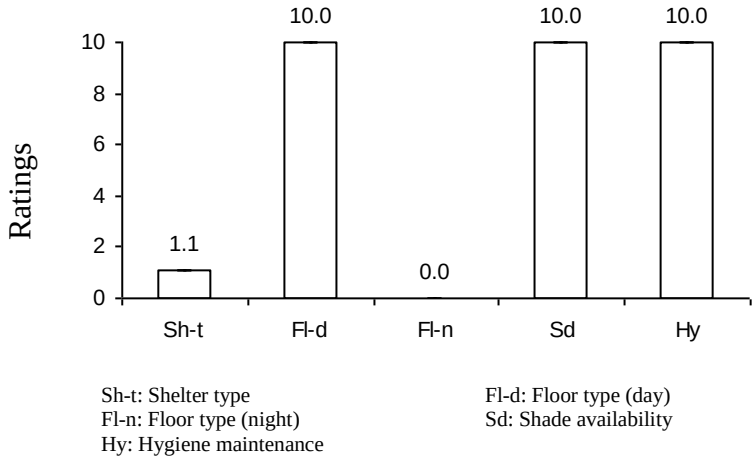


Figure 2: Ratings for shelter related parameters

Water availability and use

- All the elephants had access to tap water
- Number of times drinking/ day = 3
- Average quantity drinking was 128.9 l . (SE = 6.9, N =7)
- Water quality tests were done
- Bathing place was open ground
- Duration of bath (hrs): Mean 0.6 hrs (SE = 0.1, N = 7)
- Summer bath time: Mean 1.4 hrs (SE = 0.1, N =7)
- Seasonal variation in bathing: Summer-3 times, Winter-once
- Materials used for bath: Plastic & Scrubber

Occurrence of water is considered important for wild elephants (Mckay, 1973). Availability and use of water for drinking and bathing was rated considering occurrence and ease of accessibility, quantity and/ or duration of the activity, and use of appropriate materials. Mean rating was 5.1 (SE = 1.7, N= 6) with 48 % of all the ratings getting a score less than four (Figure 3).

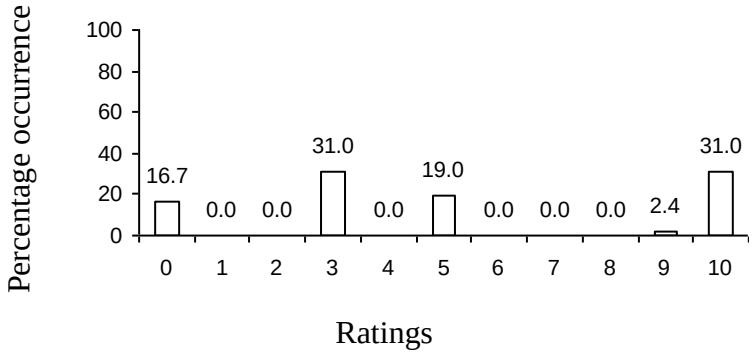
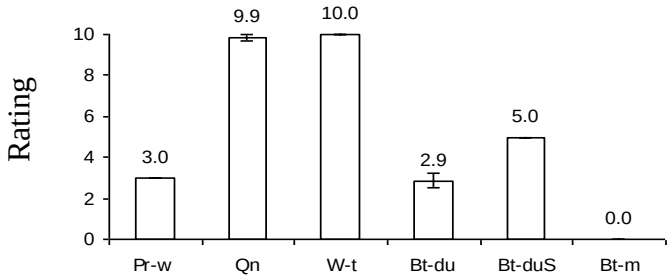


Figure 3: Percentage occurrence of ratings

Running water sources are less prone to contamination when compared to stagnant sources. Mean rating was 3.0 (SE = 0.0, N= 7) showing use of tap water for all the observed animals. High rating was given when duration accounted for 1- 2 % of a day. Mean rating was 2.9 (SE = 0.4, N = 7). The location of the zoo in a region with relatively high ambient summer temperature necessitates measures to maintain body temperature of the elephants. Mean rating for summer bath duration (Figure 4) was 5.0 (SE = 0.0, N = 7). Use of hard, abrasive scrubs has been given low rating. Mean rating was 0.0 (SE =0.0, N = 7).



Pr-w: Availability of perennial water source
Qn: Quantity of water provided for drinking
W-t: Water quality tests
Bt-du: Bath duration
Bt-duS: Bath duration summer
Bt-m: Bathing materials used

Figure 4: Ratings for water related parameters

Rest and sleep

- All the elephants were allowed to rest
- Resting place was the shelter/ enclosure
- Type of shade during day/night: Day- trees, Night-enclosures
- Mean sleep duration was 6.9 hrs (SE = 0.7, N =7)

Wild elephants are known to rest during hot periods of the day, sleep during the night (Kurt and Garai, 2007). This parameter was rated considering factors such as opportunity to rest/ sleep, duration and place. Mean rating was 4.9 (SE = 2.1, N= 5) with 51% of all the ratings getting a score less than two (Figure 5).

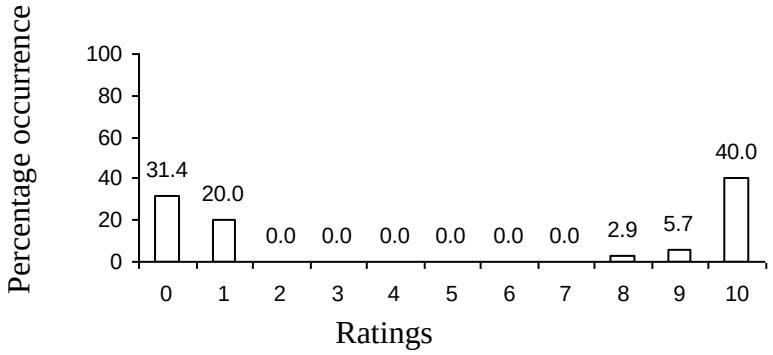
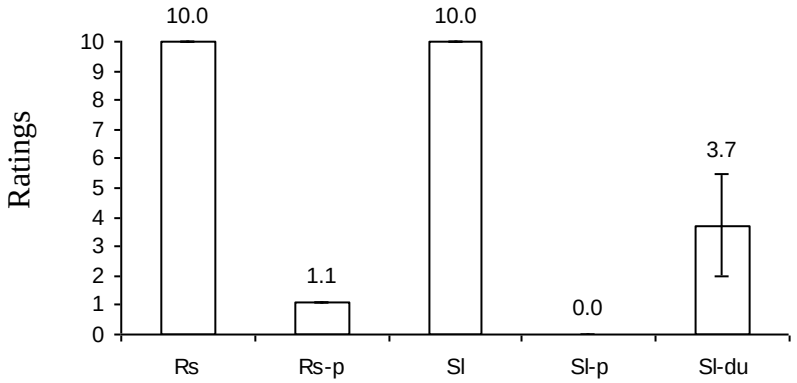


Figure 5: Percentage occurrence of ratings

All the observed elephants were given opportunity to rest and sleep. Hence, rating for both sub-parameters was 10.0 (SE =0.0, N =7). The elephants were said to be kept within enclosures at night. Hence, rating for sleeping place (Figure 6) was 0.0 (SE =0.0, N=7).



Rs: Rest availability
Sl: Sleep availability
Sl-du: Sleep duration
Rs-p: Resting place
Sl-p: Sleeping place

Figure 6: Ratings for rest and sleep related parameters

Opportunity to walk

- The elephants were walked for 2 – 2.5 kms over a duration of 1 -2 hrs.

Elephants are known to be active for most part of a day (Kane,et al., 2005). Confining elephants within restricted spaces may involve reduced opportunity to walk / be active. This parameter was rated by taking into account the opportunity provided to the animals to walk and the nature of terrain used for walking. Mean rating for walk

was 10.0 (SE = 0.0, N= 4) whereas the mean rating for nature of terrain was 0.0 (SE = 0.0, N =4).

Social interaction

- All the elephants were said to be allowed to interact in the open area for 9 hrs.
- Location of interaction was feeding site and bathing area
- Type of interaction: Cajoling, trunk interaction, greetings etc.

Provision for social interaction among members of the same species is of paramount importance to animals such as elephants which are known for maintaining long lasting relationships within family units (Vidya and Sukumar, 2005). This parameter was rated using four sub-parameters. Mean rating was 8.0 (SE = 1.4, N= 4) and about 50% of the values fall under 10 (Figure 7).

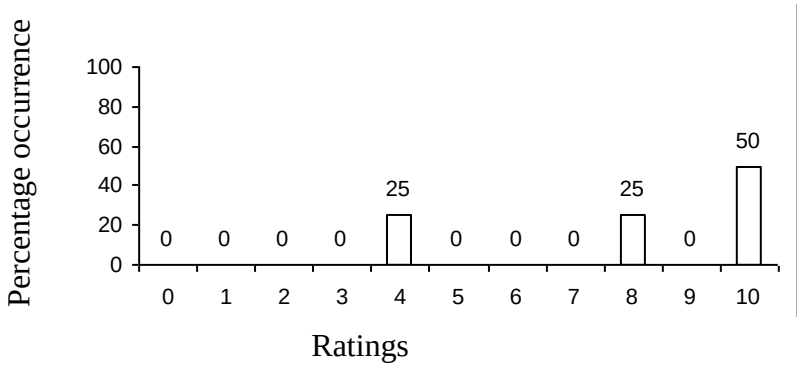
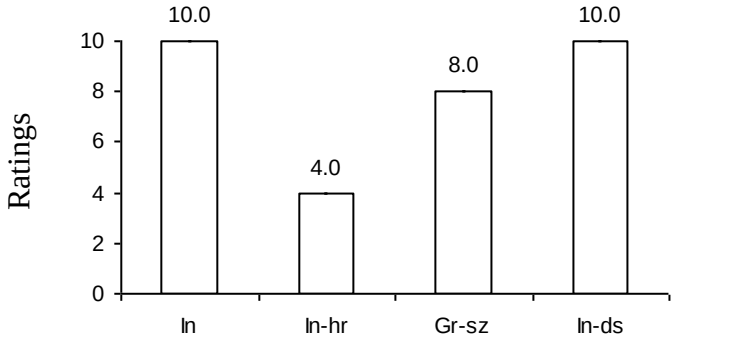


Figure 7: Percentage occurrence of ratings

All the observed elephants were said to be allowed to interact. Hence, rating was 10.0 (SE =0.0, N=7). Duration for which interaction was allowed was rated (Figure 8). Mean rating was 4.0 (SE = 0.0, N =7).



In: Opportunity for interaction
In-hr: Interaction hours
Gr-sz: Group size
In-ds: Distance between animals

Figure 8: Ratings for social interaction related parameters

Chaining

- All elephants were chained at night for 15 hours in the shelter
- Region of chaining: one front and one back leg

- Chain weight: 66 kgs
- Chain length: 14m
- Not allowed to free ranging

Management of captive elephants using chains is a widespread practice. This parameter was rated considering region of chaining and whether allowed to free ranging or not. Mean rating was 1.7 (SE = 1.7, N=3) showing occurrence of bad conditions (Figure 9).

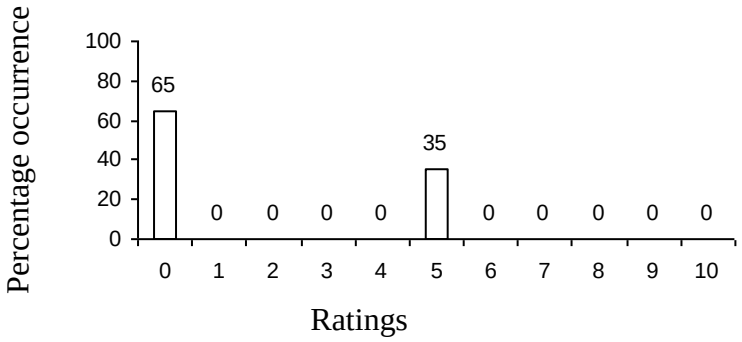
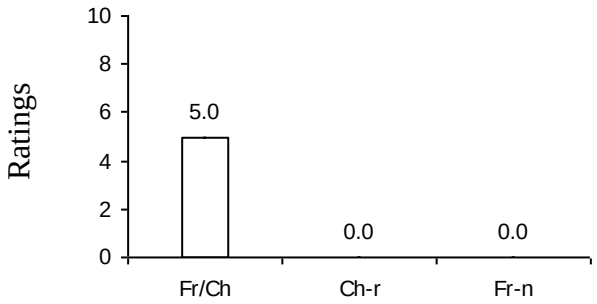


Figure 9: Percentage occurrence of ratings

The sub-parameter of 'free ranging' provides an indication of the chained or free ranging status of the elephants. Low ratings reflect greater proportion of chaining duration. Mean rating was 5.0 (SE = 0.0, N=7) (figure 10). It is a common practice to allow working elephants to free ranging at night. Mean rating was 0.0 (SE =0.0, N=7).



Fr/Ch: Free-ranging or chained Ch-r: Chaining region
Fr-n: Free-ranging at night

Figure 10: Ratings for chaining related parameters

Observed behaviour

- Vijay (male, 23 yrs) described as agitated, nervous and aggressive towards strangers
- Asha (female, 35 yrs.) described as nervous, aggressive at times towards mahout
- Remaining elephants: reliable/ quiet

This parameter was rated based on the temperament of the animal and incidence of aggression. Mean rating for observed temperament of the elephant was 7.1 (SE = 1.8, N= 7) with two elephants (Vijay, male, 23yrs. and Asha, female, 35 yrs.) said to be nervous/ agitated. Mean rating for aggressive behaviour was the same as for observed temperament.

Work

- Work type was zoo exhibit, rides, tourism, minor lumber, for festivals
- As zoo exhibit: work duration was from 8 a.m. to 5 p.m.
- Rides: 3 – 5 p.m.
- Mean age when elephant began working was 19.6 yrs (SE = 2.9, N = 5)
- Rajani/Vanaja (female, 41yrs.) were also used in festivals to take part in processions
- Vijay, Jamuna, Anarkali and Rani: made to beg from zoo visitors by mahouts
- Jamuna and Rajani-Vanaja worked 1 hour extra during summer
- Number of people carried for rides: 6 adults or 8 children
- Howdah weight: 50 kgs; type: wooden, padded with grass
- Mean number of trips/day: 14 (SE = 1.9, N = 4)
- Shade availability during work: no shade for two working elephants, available when part of zoo exhibit
- Water available for four animals and not available for Jayan
- Food available for all observed elephants(N = 5) during work
- Food type: provided by visitors: Banana, Fruits etc. Provided by zoo: grass

Ratings were designed to reflect the work conditions which promoted natural behaviour. Mean rating for this parameter was 5.0 (SE =1.9, N = 5) with 52% of all ratings getting a score less than six (Figure 11).

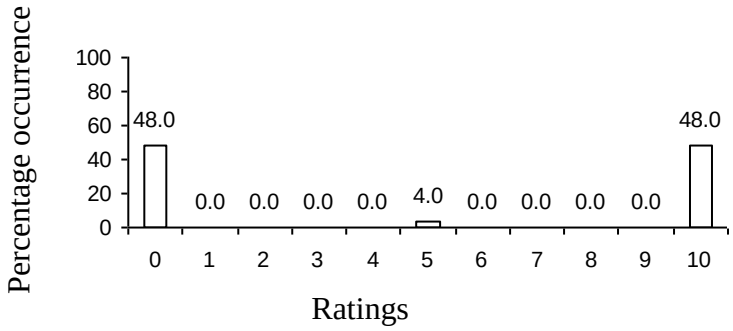


Figure 11: Percentage occurrence of ratings

Low ratings were designed to show use of elephants for unnatural work types. Mean rating was 0.8 (SE =0.8, N= 6) as the animals were said to be used for tourist rides. Some elephants were also said to be made to seek money from zoo visitors. Working elephants are made to bear weights of varying heaviness. However, the animals have to bear this weight repeatedly during the course of work. Mean rating (Figure 12) was 0.0 (SE = 0.0, N=4). Provision of shade for animals exposed to high ambient temperatures during work is important in maintaining its well-being. Mean rating was 6.0 (SE = 2.4, N =5) with two elephants, Jayan (male, 36 yrs.) and Rajani / Vanaja (female, 41 yrs.) not having access to shade.

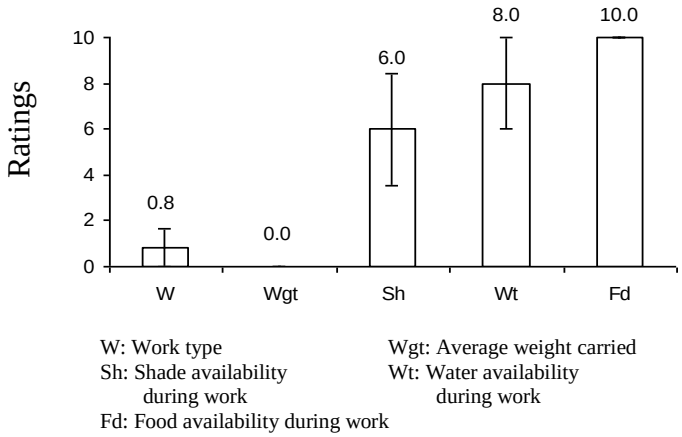


Figure 12: Ratings for work related parameters

Food provisioning

- All except the two males (Vijay and Jayan) were provided both with stall feed and allowed to free ranging for browsing/ grazing within their zoo enclosures
- Stall food: Grass, Fodder, Rice (*Oryza* sp.), Jaggery, Ragi (*Panicum* sp.), Salt, Sugarcane (*Sacharum* sp.), Banana (*Musa* sp.), Tender coconut
- Food source: Zoo owned farm, Ragi and salt from kitchen, Sugarcane and banana from the market
- Quantity: Grass-30 katta (bundles), Fodder-30kg, Rice-Jaggery, Ragi, Salt-2/3kg each, Sugarcane-4 pieces, Banana-4 each, coconut-2
- Sugarcane, banana not given daily for Vijay, Anarkali, Rani, Rajani-Vanaja
- Type of mineral mixture given: Agri-min daily
- Ration chart used for all elephants
- Straw provided: Sorghum/Napier, once a day
- Same food provided throughout the year

Wild elephants have been observed to feed on a variety of plants as they forage (Mckay, 1973). Food provisioning in captive conditions might not be able to replicate the variety seen in the wild, considering the restrictions imposed on space. Ratings were designed to reflect this phenomenon; management practice of maintaining diet charts was also included with this parameter. Mean rating was 7.2 (SE = 1.7, N = 4) and 50% of the values fall under 10 (Figure 13).

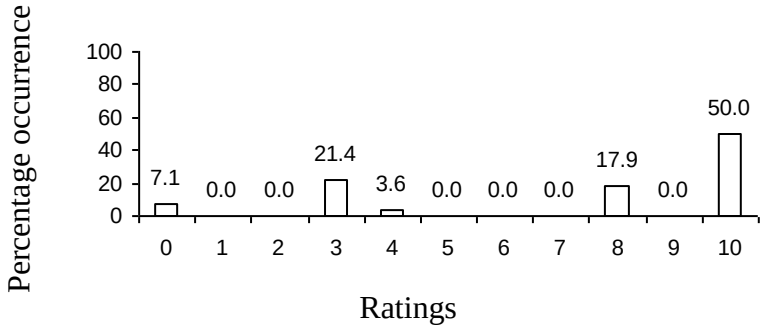
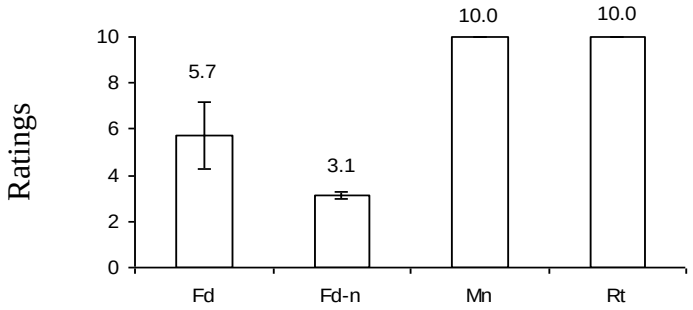


Figure 13: Percentage occurrence of ratings

High ratings show opportunity to free ranging for foraging as well as provision of stall feed. Mean rating was 5.7 (SE = 1.5, N =7) with both male elephants (Vijay, 23 yrs. and Jayan, 36yrs.) being provided only stall feed. The number of items provided during stall feed is an indication of the variety. However, this variety cannot replicate the range of food observed in the wild. Hence the number of items is divided by two and rated. Mean rating (Figure 14) was 3.1 (SE = 0.1, N =7).



Fd: Food provisioning type
Fd-n: Number of food items
Mn: Mineral mix given
Rt: Ration chart usage

Figure 14: Ratings for food related parameters

Reproductive status

- Four female elephants were said to be exhibit oestrus cycles; Both males were said to be reproductively active
- All animals exposed to opposite sex
- Anarkali: no observation of mating; Asha: Mating failure; Jamuna and Asha: mated with captive male; Rajani-Vanaja: mated with wild male, one calf born, age at first birth was 21 yrs.
- Both males: no offspring sired
- Musth reported for the elephant Vijay

The expression of reproductive activity among adult animals is considered to be an indicator of health (Kurt and Garai, 2007). This parameter was rated using features such as whether reproductively active/ not, exposure to opposite sex, calves born, etc. Mean rating for female reproductive status was 6.4 (SE = 1.0, N = 20) with 35% of all the ratings getting a score less than four (Figure 15).

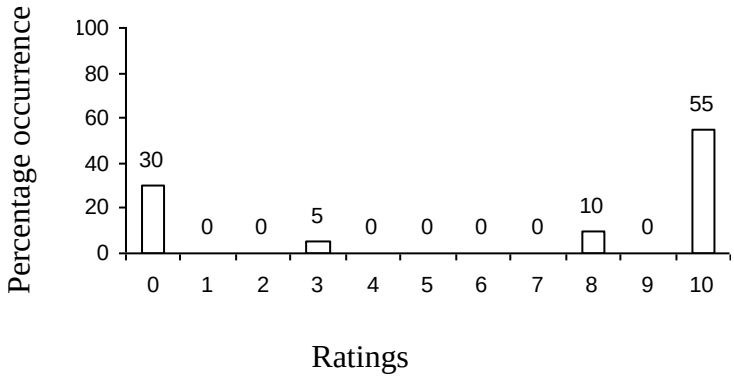


Figure 15: Percentage occurrence of ratings for females

Mean rating for male reproductive status was 6.7 (SE = 2.1, N= 6), and about 67% of the ratings fall under 10 (Figure 16).

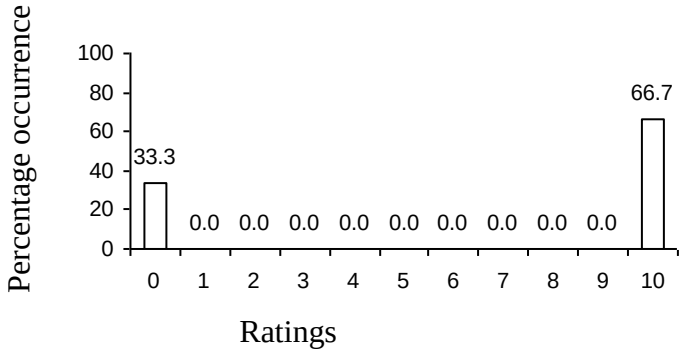


Figure 16: Percentage occurrence of ratings for males

Health status and veterinary care protocol

- Disease/ injury:
  Vijay: Foot rot, Oral cavity problem, Parasites
  Jamuna: Obesity
  Jayan: Foot rot, Fissures, Toe nail cracks, Parasites, Sneezing
  Asha: Foot rot, Fissures in sole, oral cavity problem, Obesity
  Anarkali: Parasites, Respiratory problems, abnormal respiratory sounds
  Rani: Oral cavity, Obesity
  Rajani-Vanaja: Lacerated wounds: left fore leg and rear leg
- Deworming status: Albendozole given once in three months
- Application of oil not practiced
- Blood/ urine/ dung sample testing: Dung tested— Microscopic examination, Once in a month
- Body measurements not taken

Captivity induces certain environments which predispose elephants to ill-health; either the disease is observed in lesser frequency among wild animals/ as a consequence of exposure to certain species not usually encountered in the wild (Kaufman and Martin, in press). Overall mean for this parameter was 6.4 (SE = 1.8, N= 7) with 36% values getting a rating of less than four (Figure 17).

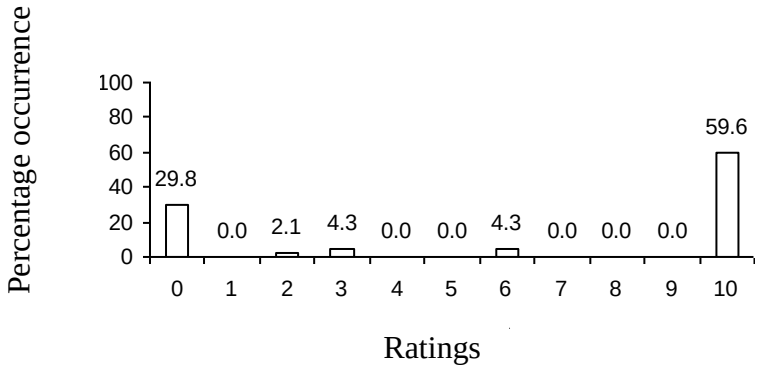
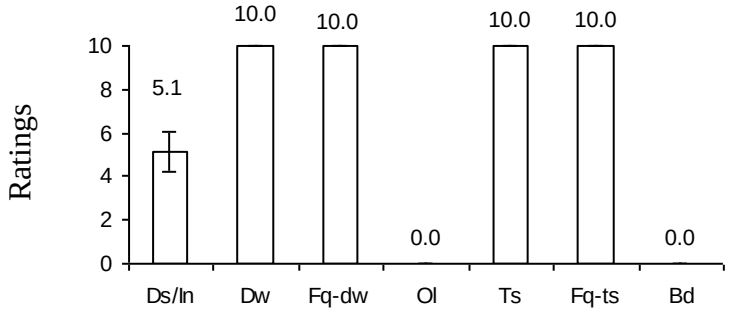


Figure 17: Percentage occurrence of ratings

The disease/ injury which led to other health problems that were chronic and incurable were given low ratings. Mean rating (Figure 18) was 5.1 (SE = 0.9, N =7). Captive elephants are normally subjected to the practice of application of oil to different parts of the body: as an insect repellant/ to bring down body temperatures. Mean rating was 0.0 (SE = 0.0, N =7). Taking body measurement of elephants is considered to be an important source for recording growth, development and any deviation from the normal. Mean rating was 0.0 (SE =0.0, N =7).



Ds/In: Nature of disease/ injury
Dw: Deworming done
Fq-dw: Frequency of deworming
Ol: Oiling done
Ts: Tests of dung/ urine/ blood
Fq-ts: Frequency of tests
Bd: Body measurements taken

Figure 18: Ratings for health and veterinary care related parameters

Veterinary personnel and record maintenance

- One veterinary doctor with 21 years experience with elephants
- Associated with zoo, daily visits
- Two veterinary assistants available
- Veterinary clinic facility: mini OT, lab, x-ray, Incinerator, quarantine, I.P. Ward, Tranquilizer, Dart kit.

Table 1: Profile of facilities available in Zoological Park

	staff quarters	cooking shed	Cook	cooking vessels	provision shed	animal stand	Chain	Zoo Manager	Animal keeper
No.	0	1	1	available	1	1	available	1	8

Availability of veterinary doctors and assistants along with maintenance of clinical/ service/ health records provides an indication of care by the management. It could also be an indirect pointer towards the effect of captivity on elephant health. Mean rating was 9.7 (SE = 0.3, N= 7), and 86% values are under 10 (Figure 19).

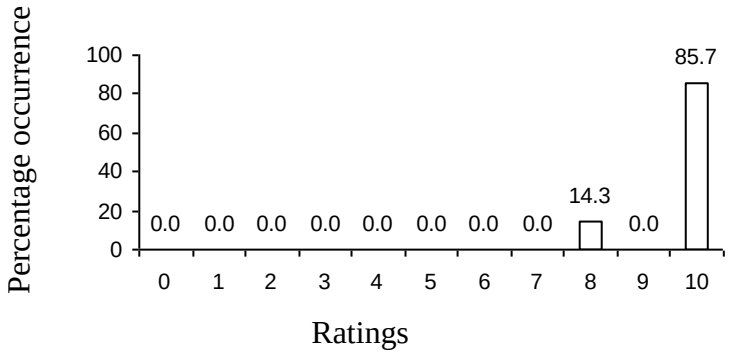
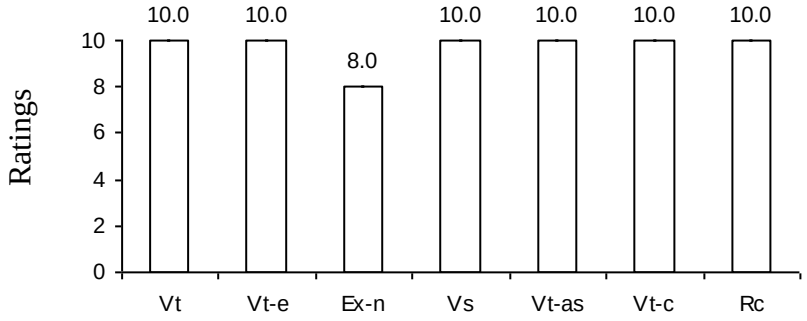


Figure 19: Percentage occurrence of ratings

Mean rating was 8.0 (SE =0.0, N =7) indicating experience between 20- 30years. Daily visits to check the animal's health was given high rating. Mean rating (Figure 20) was 10.0 (SE =0.0, N=7).



Vt: Availability of veterinary doctor
Vt-e: Experience with elephants
Ex-n: Number of years experience with elephants
Vs: Frequency of visits
Vt-as: Veterinary assistant availability
Vt-c: Veterinary care facilities available
Rc: Maintenance of records

Figure 20: Ratings for veterinary personnel and record maintenance related parameters

Funds required: Overall fund required for each item/animal/year: 4 -5 lakhs Funds given: same as required

Welfare status of mahouts

Eight handlers were said to be taking care of the elephants. Mean age was 44.6 yrs. (SE = 2.3, N = 8). Mean number of years of experience was 22.5 (SE = 2.6, N=8), ranging from 12 – 35 years. Mean number of years of experience with his elephant was 18.7 yrs. (SE = 1.8, N = 12).

Four of the interviewed handlers had relatives in this profession, while one did not. Of the seven mahouts/ handlers, only two were said to have undergone training, the others were said to have learnt at the zoo. Agriculture, tailoring and "Paliya" were listed as family occupation. All the handlers (N = 8) were said to be educated/ literate. Education level ranged from being literate to 10^{th} standard.

Four of the handlers (N = 8) had one of their relatives having worked as animal keeper in the zoo. Of the remaining, two had been mahouts and the rest worked as tailor or in the defence sector. Mean salary was Rs. 95,950.0 (SE = 10,282.6, N = 8).

Most of the handlers (N = 8) were said to permanent employees, while two were temporarily employed. All the handlers were married with number of children varying from one to eleven.

Number of commands known to handlers ranged from 15 – 36. All the handlers were said to spend 8 hours with their animal. All the handlers used tools to control the animal. Tool used were metal ankush, wooden ankus, stick pike, bill-hook, kukri. All the handlers were subjected to health check-ups as per zoo protocol. All the handlers were insured. Mean insurance amount was Rs. 50000.0 (SE = 16366.3, N = 8).

Except for one mahout, all the handlers were said to consume alcohol. Timings of consumption varied from after work to during work hours. Overall ratings for mahouts was 6.3 (SE = 0.4, N= 121) When all the individual ratings were considered across all the observed sub-parameters, 22% value came under 0 and about under 10 (Figure 21).

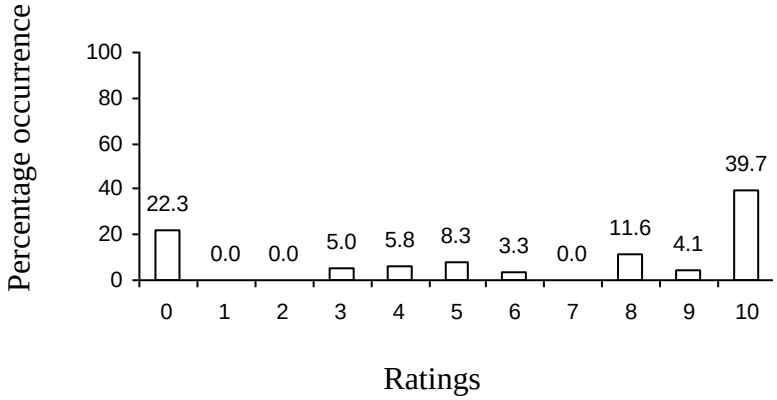
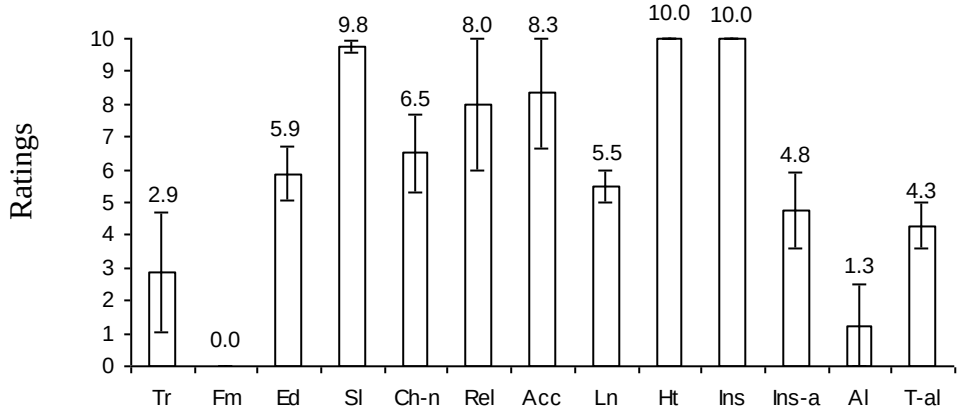


Figure 21: Percentage occurrence of ratings across all sub-parameters

Twelve sub-parameters were used to assess. Overall mean rating was 6.1(SE = 0.4 N = 90) with 50 % values getting scores between 8 and 10. High ratings have been given for mahouts whose family occupation is handling elephants as this shows tradition based knowledge of the animal. Mean rating was 0.0 (SE =0.0, N=3) with all three mahouts not specifying this as a family occupation. Ratings were designed to reflect a salary capable of supporting a family of four in urban areas. Low ratings indicate inadequate salary. Mean rating was 9.8 (SE = 0.2, N = 8). Provision of accommodation for handlers was given high rating. Mean rating was 8.3 (SE = 1.7, N =6). Handlers covered by insurance were given high ratings. Mean rating was 10.0 (SE = 0.0, N=8). Consumption of alcohol (Figure 22) by the handlers was given low rating as this practice could endanger the lives of elephants/ people in the course of performing their duties. Mean rating was 1.3 (SE = 1.3, N = 8).

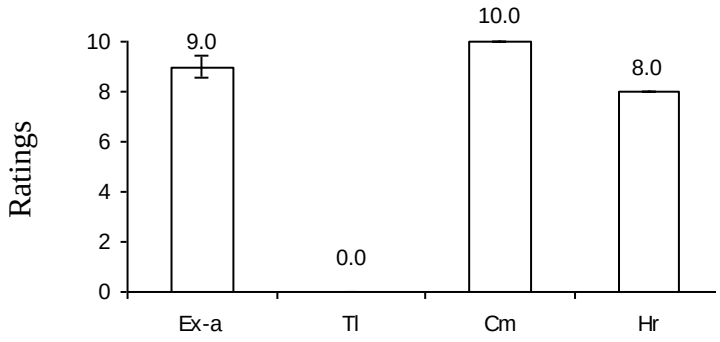


Tr: Training recieved
Fm: Family occupation
Ed: Education status
Sl: Salary
Ch-n: Number of children
Rel: Having mahouts as relatives
Acc: Accommodation availability
Ln: Languages known
Ht: Health check-up status
Ins: Insurance availability
Ins-a: Amount insured for
Al: Alcohol consumption
T-al: timings of consumption

Figure 22: Ratings for socio-economic and profession sub-parameters

Mahout-elephant relationship

This was rated considering the handler's experience in the profession (Figure 23), use of tools to control the animal and knowledge of commands. Mean rating was 6.7 (SE = 0.7, N= 31).



Ex-a: Experience as % of his age
Tl: Use of tools
Cm: Knowledge of commands
Hr: Hours spent with elephant

Figure 23: Ratings for mahout-elephant relation sub-parameters

Overall ratings for elephants in Zoological Park

Overall mean rating for the elephants in the zoo was 6.2 (SE = 0.2, N= 373), considered across all the observed sub-parameters. When captive conditions involving physical, social and physiological status were rated exclusively, ignoring availability of veterinary personnel and performance of veterinary routines, overall mean rating was 5.7 (SE = 0.3, N= 268) with ratings less than five, contributing 42 % of all the scores (Figure 24).

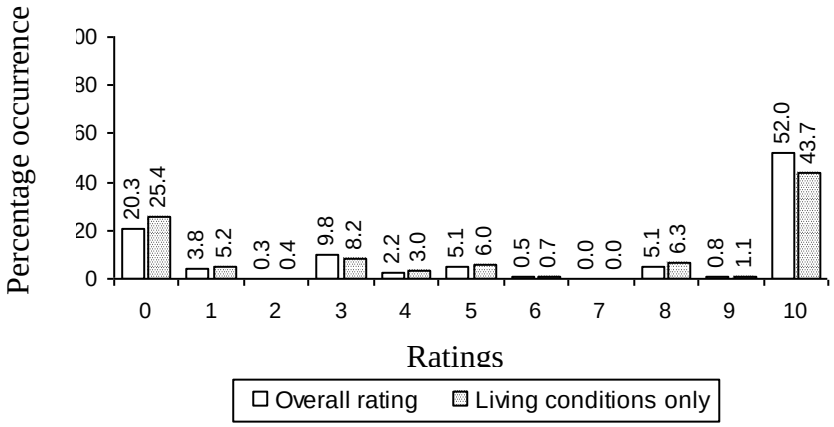


Figure 24: Percentage occurrence of ratings

Discussion

The ecological and social needs of large-sized mammals such as elephants are complex: they are active for most part of a day foraging/ searching for companions covering many kilometers of varied habitat (Poole and Granli, in press), form and maintain social relations with number of individuals (Vidya and Sukumar, 2005), are able to recognize these individuals, use varied means of communication among themselves, have been observed to use tools in different contexts (Kurt and Garai, 2007). These characteristics of physical, social and cognitive abilities require that captive elephants are provided with an environment which enables expression of their species-specific behaviour, without curtailing it due to the expediency of economics.

Elephants at the Nehru Zoological park, Hyderabad, were assessed for deviations, if any, experienced in their overall living environment as opposed to those observed for wild, free-ranging conditions. The greater the deviation, the more inappropriate the captive environment. The overall mean rating for the elephants in the zoo was 6.2.

There are two aspects to be considered regarding the overall rating:

1. The occurrence of sub-parameters whose values could only be zero or ten without any range in between, indicating presence-absence of a feature (referred to as Yes-No types). Such sub-parameters formed 50% of the observed sub-parameters. Ten scores from such sub-parameters contributed to 38 % of all the individual ratings. This indicates presence of features suitable to elephants.

   However, ratings indicating satisfactory conditions among non-"Yes-No" types, which provide insight into a feature, was only 7.2 % of the observed sub-parameters.
2. Ignoring availability of veterinary personnel and performance of veterinary routines, only physical, social and physiological status being considered, overall mean rating was 5.7.

Features of the zoo not conducive to elephants:

1. An elephant's biology is associated with being active for 80 % of a day, traveling across varied habitat (Kane, et al., 2005). The zoo elephants were allowed, when

not being used for work, to roam within the four acre enclosure. However, this was limited to people-friendly zoo working hours only (9 hours a day).
In the absence of information regarding managerial efforts to provide for natural conditions within this area, it is difficult to assess the quality of the open space.

2. Shelter: use of hard substrates has been associated with foot and related health problems in captive elephants (Poole and Granli, in press), (Benz, 2005). All the elephants were exposed to concrete floors for a minimum of 15 hours a day. Also, despite availability of space with natural substrate, all the elephants were confined to their enclosures at night. Three of the seven elephants were said to be experiencing foot related injuries.
3. Wild elephants are said to drink water at least once a day (Shoshani and Eisenberg, 1982). Provision of water through taps implies unavailability when the elephant needs to drink, as they have to depend on people for this. Tap water was a source in this zoo. This source assumes greater importance when ambient temperatures are considered: during summer, temperatures can reach 40^0C or more. Bathing with water is considered to be thermoregulatory in elephants (Mckay, 1973).
4. Elephants are social animals, females maintaining long-lasting bonds with other group members (Sukumar, 2003). Young and growing males too need the learning experience of a social group (Lee and Moss, in press).
On the face of it, the group structure of the elephants in this zoo included males and females of varying ages, allowing for interaction. However, their work schedule and overnight chaining prevented expression of species-specific behaviors. Three of the elephants, Jayan (36 yrs., male), Rani (44 yrs., female) and Rajani/Vanaja (41 yrs., female) were used for providing rides to zoo visitors. Rajani was also said to be used in temple festivals. In addition, the remaining elephants were said to be made to seek money by their mahouts from visitors. All the elephants were chained (one front and one back leg) at night within their enclosures for 15 hours. Thus, the entire schedule effectively reduced the opportunity available for the elephants to engage in social behaviour.
5. Among the female elephants, only one animal was said to have given birth—despite the occurrence of adult, reproductively active females and males in the group. Some causes for abnormal reproductive state could be occurrence of stress due to isolation/ social inexperience/ poor handling (Clubb and Mason, 2002).

Veterinary routine

The zoo has access to a veterinary clinic facility with basic facilities. There is a doctor, with assistants, for veterinary care for the zoo animals.

1. Veterinary routines such as deworming have been practiced regularly. However, the practice of taking body measurements is absent. Body measurements are an indicator of growth and development and have been associated with such important factors as sexual maturity in elephants (Kurt and Garai, 2007).
2. Only dung samples seem to have been tested for presence of endo-parasites. Three of the seven elephants were reportedly observed to be having respiratory problems. With the facilities available, blood tests could also have been done to check for available diseases and / or bio-chemical parameters. Newspaper reports (The Hindu, August 31, 2008) mention the death of a female adult elephant (Anarkali, 40y) in the zoo from unknown causes. The death of the elephant can have consequences on the social order of the group and equally importantly may

cause health concerns for the remaining animals. A proper veterinary schedule with regular recording of data on health can prevent this from happening.
3. Records, though available, were reportedly not maintained.

Transfer across facilities

Mean age at purchase or transfer into this zoo was 13.6 yrs (SE = 4.6, N =7). This age was calculated based on the age of the elephant and year of purchase/ transfer. Kurt and Garai (2007) state the need for young males to establish a period for their musth behaviour and for females to learn/ rise in dominance hierarchy. Both these characteristics maybe achieved when the elephants are older than 20 yrs. The transfer of elephants at a learning age, coupled with the fact of breakage of social bonds in their previous group, if any, might be a source of stress.

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Section 3:
Captive elephants in Temples

EXECUTIVE SUMMARY

A temple in Hyderabad in the state of Andhra Pradesh has been maintaining a female elephant, named Gajalakshmi (aged 22 yrs.), used in temple related functions. This investigation assesses the welfare status of the elephant and its condition in captivity based on the physical, social and behavioral conditions as well as the health status of the elephant.

The captive environment has been studied using physical aspects such as provision of shelter, floor type, etc., behavioural features such as the animal's temperament, incidents of aggression and social characteristics such as opportunity for interaction with other elephants, etc. A total of 53 sub-parameters were observed and rated and each of the parameters has been rated on a zero to ten scale with zero representing the worst possible situation and ten implying a satisfactory state, closer to what an animal experiences in the wild.

Rating was graded in the following manner:

- 0 – 2.4: Bad conditions
- 2.5 – 4.9: poor
- 5.0 – 7.4: moderate
- 7.5 – 10.0: satisfactory

Gajalaxmi is kept in a closed enclosure that is 500 square yards in area (~418 square metres). The enclosure is open with a boundary wall, the floor is earthen. Additionally, there is a single tree present, which provides some shade during the day.

Overall mean for shelter for this elephant was 4.2 with four sub-parameters getting a rating of less than three. Tap water and a borewell located 100 m away were the source of water.

Gajalaxmi is allowed to drink tap water three times a day; she is bathed using borewell water once a day, and twice a day during summer. Bathing place size was 25 esq. Overall rating was 6.0 with three sub-parameters getting a rating of less than five.

No interaction is possible as the elephant is kept singly. Elephants are social animals with group living forming the basis of a female animal's life, overall rating for physical exercise and social interaction was only 1.7 with five sub-parameters getting a rating of zero.

The animal is tied with a 25 m long, and one front leg and one back leg are chained. Mean rating for chaining related parameter was 0.0 showing occurrence of bad welfare conditions.

Gajalaxmi takes part in temple processions eight days in a month. This involves walking a maximum of 12 km along roads without shade, carrying a maximum weight of 500 kg, or else she drags a maximum weight of 250 kg for 2-3 km. Overall mean rating was 5.7 showing moderate working conditions.

Only stall feed provided, no free-range, the food type includes grass-50 bundles, kadbi-20 kg, Jawar-10 kgs, Rice-25 kg, Leaves-50 kg, and banyan leaves-10 kg. She also receives jaggery and coconut during processions. Overall rating for food related parameter was 0.8 indicating occurrence of bad conditions.

Reproductively not active, not exposed to males, kept singly. Overall mean rating was 0.0 showing absence of normal reproductive functions.

No clinical/ service/ other records are maintained for the animal, skin condition is very dry; Deworming done with Ayurvedic medicine. Overall rating was 2.5 implying occurrence of bad conditions. No doctor is present at the location; however a veterinary doctor from Karnataka treats the elephant once a month. Overall rating was 0.8 indicating bad conditions for this parameter.

Overall mean rating for the elephant Gajalakshmi was 3.3implying occurrence of poor conditions in captivity. Sixty-two percent of all the ratings were below five, while fifty-two percent of the parameters and sub parameters were given a rating of zero indicating complete absence of a feature suitable for the animal.

Introduction

Elephants have been maintained in captivity for different reasons: as part of a long-established tradition, as a status symbol, as a working animal, etc. It is believed that the practice of keeping elephants in temples is a relic of the practice of keeping war elephants during peace time (Ghosh, 2005). A temple in Hyderabad in the state of Andhra Pradesh has been maintaining a female elephant, named Gajalakshmi (aged 22 yrs.), used in temple related functions.

Objective

- To asses the welfare status of the elephants and its conditions in captivity based on the physical, social and behavioral conditions as well as the health status of the elephant.
- To assess welfare of the animal handler (mahout), if any.

Method

The life of wild elephants is shaped by the interconnecting factors of their habitat and their social environment. This complex set of features may be absent in captive situations. Elephants kept in captivity have to be provided a suitable environment, based on knowledge gained from wild free-ranging elephants, which provides for expression of species-specific repertoire of behaviours and well-being of the animals (Stroud, in press). A total of 53 sub-parameters were observed and rated. The captive environment has been studied using physical aspects such as provision of shelter, floor type, etc., behavioural features such as the animal's temperament, incidents of aggression, social characteristics such as opportunity for interaction with other elephants, etc. Each of these features has been rated on a zero to ten scale with zero representing the worst possible situation and ten implying a satisfactory state, closer to what an animal experiences in the wild.

Rating was graded in the following manner:

- 0 – 2.4: Bad conditions
- 2.5 – 4.9: poor
- 5.0 – 7.4: moderate
- 7.5 – 10.0: satisfactory

Each of these features is considered to be a sub-parameter. Some of these features have been grouped together to form a parameter. For example: shelter includes sub-parameters such as: shelter type, flooring type, maintenance of hygiene and shade availability. The ratings of sub-parameters have been used to calculate a mean rating for the parameter. The same rating scale has been used for assessing conditions exclusive to captivity such as availability of veterinary care, veterinary practices followed and facilities provided. Results depicting percentage occurrence of rating, from zero to ten, for a parameter or sub-parameter have been presented.

The welfare status of the mahout has been rated on the same scale. The Mahout's socio-economic condition as well as his relationship with elephants has been assessed.

Result

Population status and the source of animal

Gajalaxmi is a 22 year old female elephant who is maintained in a temple (of Veeratapaswi Veerabhadra Shivcharyula), located in Hoontwadi, Jumerat Bazar

Road, Chudi Bazar, Hyderabad. The elephant is reported to belong to Patel & Sons Company. The animal has been kept for use in temple related activities and processions. It was transferred from its previous location in the neighbouring state of Karnataka in 2000, when the animal was 16 yrs. old.

Shelter

- Gajalaxmi is kept in a closed enclosure that is 500 square yards in area (~418 square metres).
- The enclosure is open with a boundary wall, the floor is earthen. It is cleaned twice a day with spade/ shovel. Additionally, there is a single tree present, which provides some shade during the day.

Overall mean for shelter parameter for this elephant was 4.2 (SE = 1.9, N= 6) with four sub-parameters getting a rating of less than three. The overall mean implies occurrence of poor conditions. The occurrence of natural forest conditions is considered while rating this sub-parameter. The greater the deviation from this condition, the lesser the rating. Rating was 2.5 for shelter type, showing existence of poor conditions. Considering the distance traveled by wild elephants, any area less than 1 acre (around 5000 sq.m) is given low rating. Rating was 0.0 indicating bad conditions for this sub-parameter. Natural/ earthen floors have been given high rating as they are suitable for maintaining health of the elephant's feet. Rating was 10.0 for this feature (Figure 1).

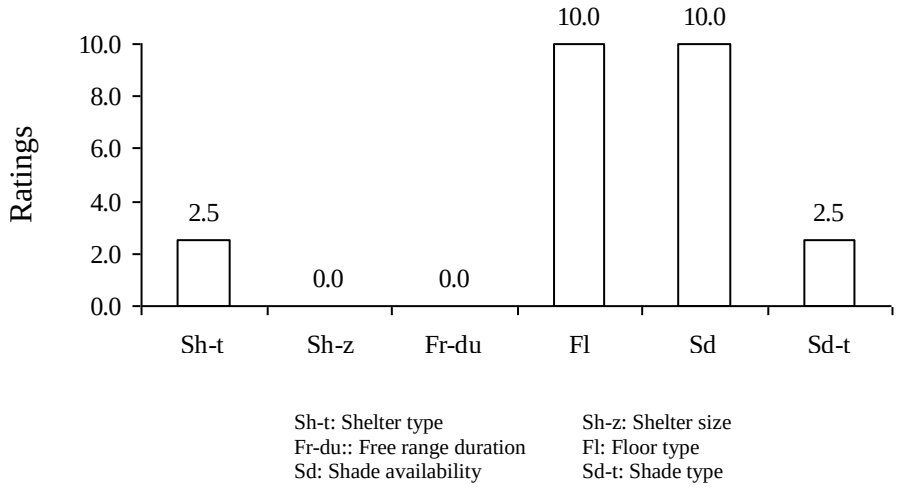


Figure 1: Rating for shelter related parameters

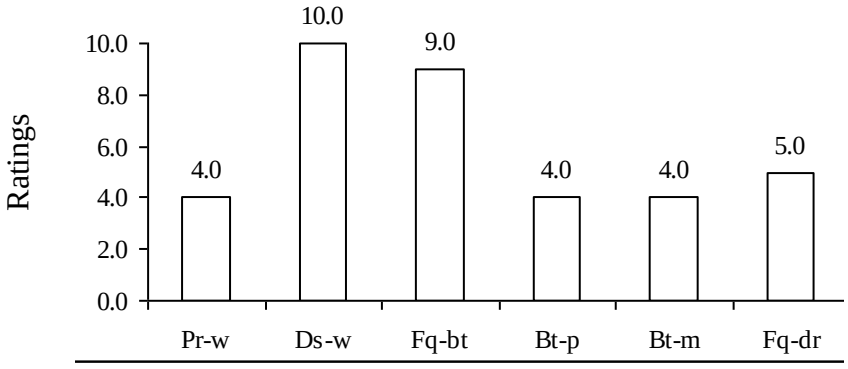
Water for Drinking and Bathing

- Tap water and a borewell located 100 m away were the source of water.
- Gajalaxmi is allowed to drink tap water three times a day, consuming approximately 280 litres of water. The water quality is good.
- She is bathed using borewell water once a day, and twice a day during summer. Bathing place size was 25 sq.m.

Wild elephants are reported to bathe (McKay, 1973), and drink water at least once a day (Shoshani and Eisenberg, 1982). Rating for this parameter was based on availability, use, accessibility of water for drinking/ bathing and methods of use.

Overall rating was 6.0 (SE = 1.2, N= 6) with three sub-parameters getting a rating of less than five. Running water is considered a good source as it is relatively free from contamination. Rating for this was 4.0 showing occurrence of poor sources as the elephant was said to be provided water through taps/ borewells— both these sources are not accessible to the elephant when it needs to drink/ bathe.

Provision of suitable environment which provides enough space for an elephant to immerse itself or perform species-specific activity is given high rating. Rating was 4.0 for this feature. Elephants take in water by their trunks. If mahouts observe this behaviour and the frequency of drinking is noted, the quantity of water consumed can be estimated. Rating was high when the number of times an elephant drinks implies consumption of 250 – 300 lts./day. Rating was 5.0 for this sub-parameter (Figure 2).



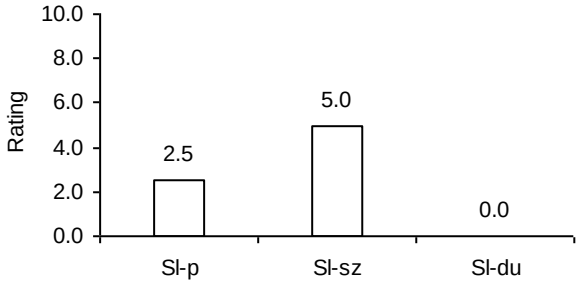
Pr-w: Perennial source of running water
Ds-w: Distance to water source
Fq-bt: Frequency of bathing
Bt-p: Bathing place
Bt-m: Bathing materials
Fq-dr: Frequency of drinking water

Figure 2: Rating for water related parameters

Sleeping Conditions

- Resting and sleeping place were the enclosure itself
- Area was 125 sq.m

Elephants have been reported to sleep around 4 hours (Zepelin, et al., 2005). Deviation from this norm is given low rating. Mean rating (Figure 3) was 1.76 (SE = 2.5, N= 3) showing occurrence of bad conditions. This parameter was rated considering suitability of place of sleep and duration of sleep.



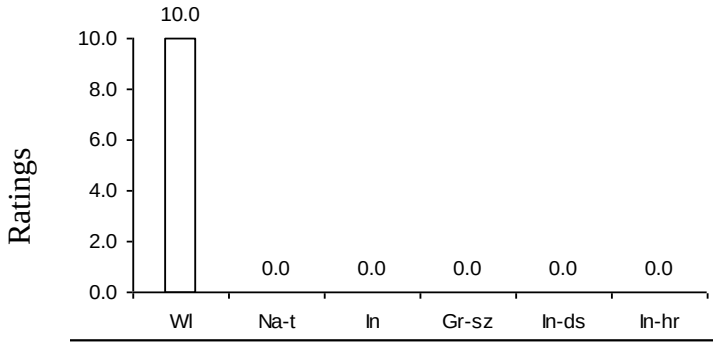
Sl-p: Sleeping place
Sl-sz: Sleeping area (size)
Sl-du: Sleep duration

Figure 3: Rating for sleep sub-parameters

Physical Exercise and Social Interaction

- Accompanied on a 2 km, 2 hour walk by two mahouts.
- Nature of terrain: roads
- No shade available
- No interaction is possible as the elephant is kept singly

Benz (2005) cites several authors reporting the association between foot problems and lack of exercise or exercise on hard surfaces. High rating was given for opportunity to walk and walking on natural substrates. Elephants are social animals with group living forming the basis of a female elephants life (Lee and Moss, 2008). High rating for the "social interaction" parameter represents occurrence of similar herd structure in near natural conditions, both physical and social. Overall rating for physical exercise and social interaction was only 1.7 (SE = 1.8, N = 6) with five sub-parameters getting a rating of zero (Figure 4).



Wl: Opportunity for walk
In: Opportunity for social interaction
In-ds: Interaction distance
Na-t: Nature of terrain
Gr-sz: Group size
In-hr: Interaction hours

Figure 4: Rating for physical exercise and social interaction related parameters

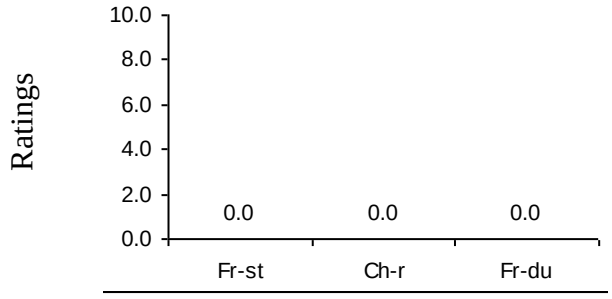
The elephant was said to be allowed to walk. Hence, a rating of 10 was given. The elephant was walked on tarred roads which are considered unsuitable for the animal's feet. Rating was zero for this feature.

The elephant was maintained singly, hence, there was no opportunity for interaction. Rating was zero for this feature. Sub-parameters for 'interaction' were all given a rating of zero as the elephant was kept singly.

Chaining

- Tied with a 25 m long chain, weighing 35 kg and size of 8cms (width).
- Front leg and one back leg chained
- No free ranging allowed
- Distance to work place from place of being chained was 80 m

Improper use of and long duration of chaining is said to have adverse consequences on the welfare of the animal (Kurt and Garai, 2007). Mean rating was 0.0 (SE = 0.0, N = 3) showing occurrence of bad welfare conditions (Figure 5).



Fr-st: Free-ranging status Ch-r: Chaining region
Fr-du: Free-ranging duration

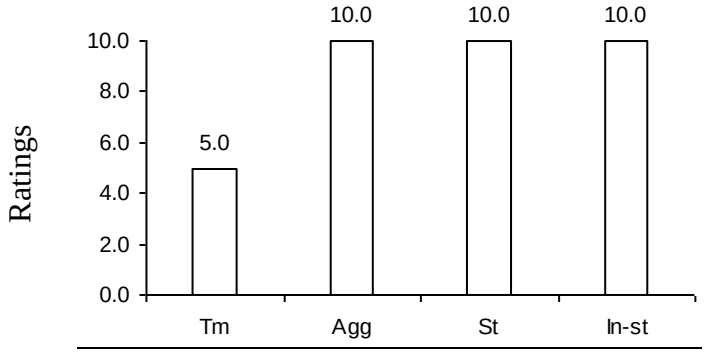
Figure 5: Rating for chaining sub-parameters

The elephant, Gajalakshmi, was not allowed to free ranging and was chained all the time except for work. She was said to be chained in the fore and hind leg. Ratings reflect this condition.

Observed behaviour

- Gajalaxmi was described by her keepers as quiet but undependable, no reports of hurting anyone or having shown stereotypic behaviours.
- One situation in which she showed aggression— after a horse fell on her during the festival of Mohharrum.

Imposition of restrictions on movement and alien conditions, in captivity, could have consequences on behaviour (Clubb and Mason, 2002). Overall rating was 8.8 (SE = 1.4, N= 4) implying manageable temperament and absence of stereotypy (Figure 6).



Tm: Temperament Agg: Incidence of aggression
St: Occurrence of stereotypy In-st: Intensity of stereotypy

Figure 6: Rating for behaviour related parameters

Behaviour sub-parameters: Aggression/ stereotypy sub parameters were given a rating of 10.0 as incidents of aggression/ occurrence of stereotypy was absent. However, the animal's temperament was described as undependable.

Work

- Gajalaxmi is said to take part in temple processions eight days a month. This involves walking a maximum of 12 km along roads without shade.
- Carries a maximum weight of 500 kg during these processions for a distance of 12 kms, or else drags a maximum weight of 250 kg for 2-3 kms.
- Age when the elephant began working—10 yrs.
- Is said to take part in more than 50 festivals that pay more than Rs.5000/- per month.
- Has a wooden Howdah weighing 60 kgs. No lubricant is applied
- Water and rest provided during work
- Food given during work: Coconut-5 to 10, Banana-2 bunch, Leaves-sufficient

Captive elephants are made to work in different contexts. High rating represents characteristics of work that is similar to the animal's natural behaviour. Overall mean rating was 5.7 (SE= 2.2, N = 7) showing moderate working conditions (Figure 7).

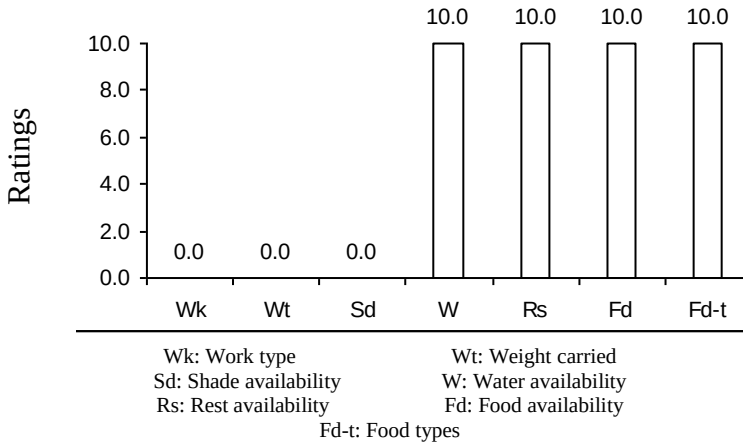


Figure 7: Rating for work related parameters

Low rating is designed to show the unnatural work type the animal is made to perform. The elephant was said to take part in processions and festivals (numbering more than 50). Rating was 0.0 for this feature. The size of the elephant may predispose people to subject the animal to heavy loads. Such loads may have to be borne consistently during the duration of work which may last the elephant's lifetime. Hence, low ratings reflect loading of the animal with heavy weights persistently. Rating for this feature was 0.0. The elephant was said to be provided with water during work. This was given a rating of 10.0; however, there was no data on the details of source/ accessibility to the animal.

Food

- Only stall feed provided, no free-range
- Food includes Grass-50 bundles, kadbi-20 kg, Jawar-10 kgs, Rice-25 kg, Leaves-50 kg, and banyan leaves-10 kg. She also receives jaggery and coconut during processions.
- Feeding area size: 83 sq.m, hygiene maintenance: bad
- Feeding hours: 24 h.

Wild elephants have been observed to feed on a variety of plants (Shoshani and Eisenberg, 1982). Food provisioning in captivity may lack the variety and behaviors involved during feeding as seen in the wild. Overall rating was 0.8 (SE = 0.9, N= 5) indicating occurrence of bad conditions.

Low rating shows use of only stall feed for the animal. Rating was 0.0 for this feature. Rating was designed to reflect a combination of free-ranging food and stall feed. Rating was 4.0 for this feature indicating bad conditions. Maintaining a ration chart for the animal assists in keeping a record of the diet pattern of the animal as well as inventory of provisions. Rating for this feature was 0.0 (Figure 8)

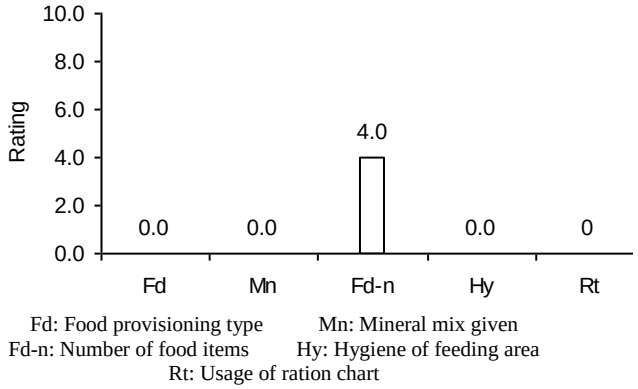


Figure 8: Rating for food related parameters

Reproductive status

- Reproductively not active, not exposed to males, kept singly

Physical fitness (Kurt and Garai, 2007) and/ or stress (harsh handling, poor nutrition, isolation) (Clubb and Mason, 2002) has linked to normal reproductive functioning in captive elephants. Overall mean rating was 0.0 (SE = 0.0, N= 3) showing absence of normal reproductive functions. The elephant had no opportunity to breed as it was maintained singly and not exposed to males. Rating was 0.0 for this feature and sub parameters as s the elephant was not exposed to males, (Figure 9).

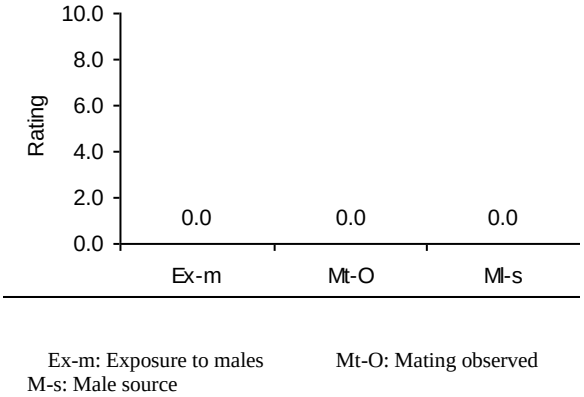


Figure 9: Rating for reproductive status sub-parameters

Health status

- No clinical/ service/ other records maintained
- Skin: dry; Elasticity of skin: slow
- Deworming done with Ayurvedic medicine
- No vaccination/ oiling of the body
- No tests of blood/ dung/ urine samples

Practices followed to maintain health among captive elephants can be considered an indication of welfare of the animal as such routines can be preventive and help in keeping the animal in good health. Overall rating was 2.5 (SE = 2.9, N = 4) implying occurrence of bad conditions.

Captive elephants are exposed to a number of domestic animals, making them susceptible to diseases carried by these animals. Hence, vaccination status has been rated. This was given a rating of 0.0 as there was no record of vaccination. Tests on samples from the animal can assist in providing an insight to the presence of endoparasites, biochemical parameters and health of the animal. Rating was 0.0 as this was not done (Figure 10).

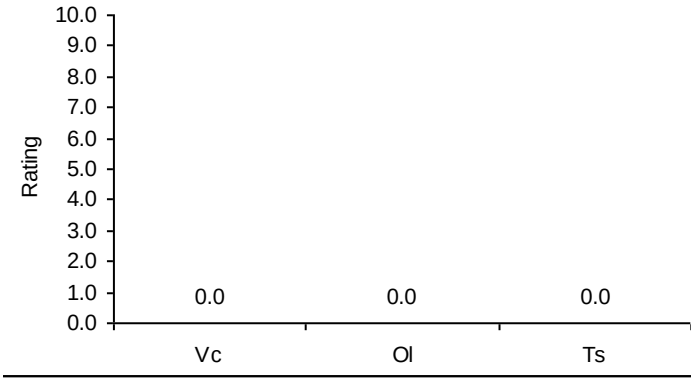


Figure 10: Rating for reproductive status sub-parameters

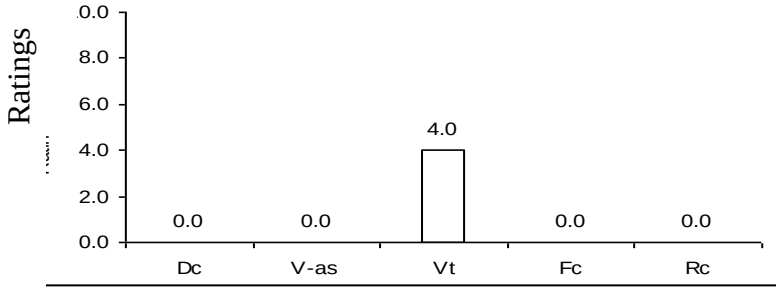
Veterinary services

- No doctor at present location. Doctor from Karnataka is said to treat the elephant once a month
- No veterinary assistant is used.
- No Veterinary facility (clinic) available.

Availability of veterinary services with experience in treating elephants is given higher rating. Overall rating was 0.8 (SE = 0.9, N= 5) indicating bad conditions for this parameter. There was no doctor available for the elephant at this location. A doctor was reported to be available in the neighboring state of

Karnataka. Hence, rating was 0.0 for this feature. A doctor was said to visit from the neighboring state once a month. Rating was 4.0 for this sub-parameter. No records

(health, service, clinical) were maintained for the elephant. Hence, rating was 0.0 for this sub-parameter (Figure 11).



Dc: Doctor Availability
V-as: Veterinary assistant availability
Vt: Frequency of visits
Fc: Veterinary facilities availability
Rc: Record maintenance

Figure 11: Rating for veterinary services sub-parameters

Infrastructure and personnel

- The following were available: Staff quarters, average condition; cooking shed, average condition; cooking vessels, adequate number, bad condition.
- The following personnel were employed: Manager, Mahout, cook

Expenditure

- Overall fund required per item/ animal/ year: Rs.3,00,000/-
- Annual man-power cost/animal/year (salaries): Rs.40,000/-
- Housing: Rs.12,000/-
- Travel: Rs.10,000/-
- The management is reportedly facing shortage of funds for maintaining the animal, as per the datasheet.

Overall mean ratings

Overall mean rating for the elephant Gajalakshmi was 3.3 (SE = 0.6, N = 53) implying occurrence of poor conditions in captivity. This rating is the mean across all the sub-parameters observed. Sixty-two percent of all the ratings were below five, while fifty-two percent of the sub-parameters were given a rating of zero indicating complete absence of a feature suitable for the animal (Figure 12)

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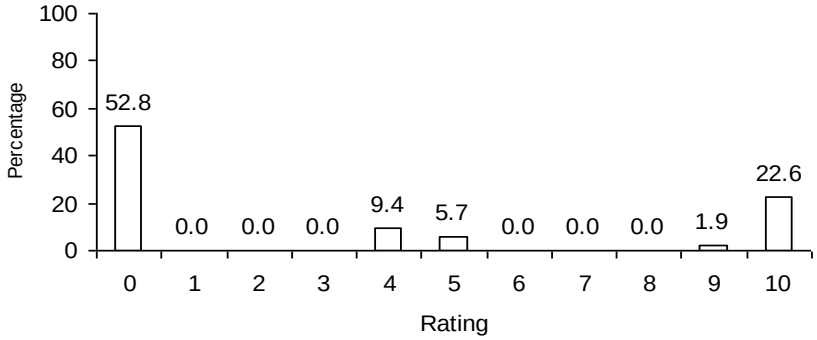

Figure 12: Percentage occurrence of ratings for elephant

Discussion

Maintenance of wild elephants in captivity requires the provision of facilities for the expression of species-typical behaviour, keeping the animal's biology as a reference (Stroud, in press). The rating for welfare status is based on this premise: the greater the deviation from an elephant's natural way of living, the lesser the rating, the poorer is its welfare.

- Elephants are considered social animals, living in groups and maintaining relationships, especially among females, that may last several generations (Sukumar, 2003). Keeping female elephants in social isolation can be considered to form one of the basic causes of poor welfare as the converse of providing social interaction is considered among the most sustainable form of enrichment (Veasey, 2006). The elephant Gajalakshmi was reported to be kept in social isolation. In the wild, Gajalaxmi would likely be living with a small herd of adult female relatives and young ones. To add to the social isolation, the elephant was chained for nearly 22 hours, effectively preventing unrestricted movement of the animal.
- Absence of functional reproductive status in the adult female due to its isolation.
- The physical space used by an elephant is important not only because of its size, but also because of its biology. Elephants are said to travel several kilometers foraging / searching for mates (Poole and Moss, 2008) across varied habitat. Home range sizes for females herds has been reported to be around 100 sq.kms (Sukumar, 1989), 200 – 300 sq.kms (Williams, in press) depending, among other factors, on the food and water availability within the areas studied. With this background, the space provided in captivity needs to be considered in terms of the effect of restricted space on the biology of the animal. Gajalakshmi, the elephant, was housed in a shelter measuring 125 sq.m., kept within the same small enclosure all day, every day, aside from the short time (around 2 hours) she was let out for temple processions and walks.

  Wild elephants are said to be polycyclic in their activity patterns, being active for major parts of a day (Kane, et al., 2005). The absence of any "occupation" or goal directed behaviour for most of the day in the life of a chained animal can have serious consequences on its psychological welfare. Gruber et al., (2000) cites several authors on the association between stereotypical behaviour and absence of opportunity for performance of species-typical behaviours.

  The elephant Gajalakshmi was described as being quiet without any incidents of aggression. However, she was also said to be "undependable."

- Rating for frequency of drinking water by the elephant indicated moderate conditions. However, when skin condition of the elephant was considered, it was described as "dry" for its texture and "slow" for its elasticity. Both these terms are signs of inadequate water consumption (Cheeran, 1998) and poor health (Fowler and Mikota, 2006). Also, there was no provision for a bathing place wherein the animal could perform species typical activities such as being able to immerse itself in water/ dust-bathe/ wallowing (BIAZA, 2006).
- Unavailability of natural conditions for the little exercise the animal was exposed to: the only time the elephant walked, it was on roads. The animal was not allowed to free ranging in a natural/ semi-natural environment.

- No provision to free range to browse/ graze. Wild elephants have been observed to feed on a variety and number of plants (McKay,1973) which involve performance of typical behaviours such as rubbing grass with distal part of trunk against forefoot to remove dirt, breaking branches using trunk/ leg or any available substrate, peeling off bark, along with other behaviors (Kurt and Garai, 2007).
- The most notable problem with Gajalaxmi's health is not any visible symptoms but the lack of attention paid to her. Absence of any kind of records regarding the animal's health or related to animal keeping; no vaccination provided or samples tested for biochemical/ health parameters. The practice of oiling the skin was also not followed.

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Section 4:
Captive elephants in circus

EXECUTIVE SUMMARY

Data was collected for five elephants belonging to the 'Great Prabhat Circus', located in Sanatnagar, Hyderabad, in the state capital of Andhra Pradesh on different aspects of their captive environment. 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 provided 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 rating, with zero representing the situation furthest 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 yrs with the age of females ranging from 35 – 52 years.

All the elephants were housed in canvas tents, with shade size available within around 126 m^2. Water was provided through tankers and the shelter also served as bathing/ resting and sleeping place. The mean rating for shelter type was 2.5, shade availability for elephants was 1.0 and overall mean for water and associated parameters were 2.6.

All five elephants were allowed to interact and the interaction was within the circus area. The mean rating for this parameter was 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 was performance of 'pooja' in front of an audience. The elephants were also reportedly being made to perform "power behaviours". The mean rating for work and associated parameters was 2.0. This circus travels a minimum of 100 kilometers and maximum of 500 kilometers. Sometimes the circus elephants were reportedly taken for begging in high traffic density regions.

All the elephants were provided only stall feeding within the circus area. Overall mean rating for this parameter was 1.4. Low values signify that there is total absence of free ranging, few varieties of food are provided and no record of rations is maintained.

Occurrence of oestrus cycles among females and musth for males was unknown. There were no records maintained for the musth status.

Elephants have foot-related problems: toe nail cracks, foot rot. Parasites were seen on the ears and belly of one elephant and none of the animals were dewormed/

vaccinated. The mean rating for health status and veterinary care or availability of doctor was 0.0.

The overall rating for elephants in this circus was 2.8 with 88 % of the ratings being less than three.

The ratio of elephants to handlers (mahout/cawadi) was 1:0.8; the mean experience in this job was 5.1 years and mean experience with his elephant in the circus was only 1.8 yrs.

Only one handler had joined the profession as it was his traditional employment. The others had joined in order to gain any employment. All the handlers used tools to control their elephants. Sixty per cent of the handlers consumed alcohol and the frequency ranged from “after work” to “frequently”.

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

Introduction

Data was collected for five elephants belonging to the 'Great Prabhat Circus', located in Sanatnagar, Hyderabad, in the state capital of Andhra Pradesh for different aspects of their captive environment. 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.

Methods

The objective of the investigation was to assess the welfare status of elephants maintained by the 'Great Prabhat Circus' at Sanatnagar, Hyderabad, through evaluation of specific parameters for 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.

Each variable/ parameter was rated on a 0 – 10 scale for its suitability to the animal. Zero represented the worst possible situation and ten, a satisfactory condition. The suitability of a parameter depended on the replication of near natural conditions for the animal, i.e., any feature which provided conditions experienced by the animal in its wild state was given a rating of 10 and the more the deviation from this state, the lesser the rating. Data for 32 parameters, representing the welfare status of five elephants, was collected by observation and interview. The welfare of the mahout/ cawadi was evaluated across 12 parameters.

Results

Population status

The mean age of elephants in the Great Prabhat Circus was 43.8 yrs (SE = 0.66, N =5) with age of females ranging from 35 – 42 yrs. The age of the single male elephant was 52 yrs.

Source of elephants and purpose of keeping

All the elephants were said to have been transferred from a circus owned by the father of the present owner. 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. This was the place where the animals were kept when not performing.
4. The shelter was said to be 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 free ranging 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 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 bathing, resting and sleeping place. Bathing area was 126m^2. Elephants were bathed for a mean duration of 0.5 hrs (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 for water parameter was 2.58 (SE = 0.20, N= 6) with all the observed elephants getting a rating of less than four (Figure 1).

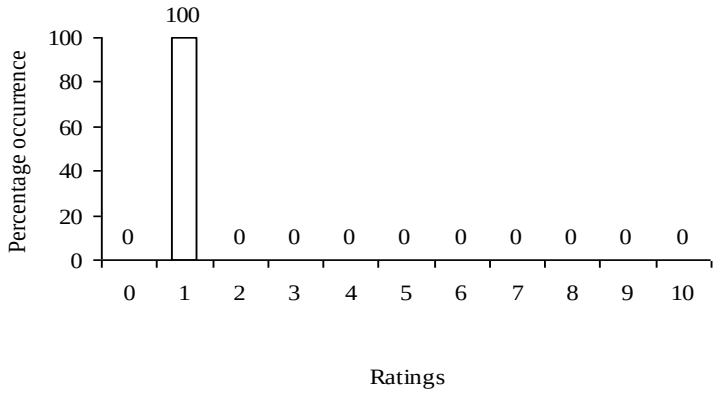
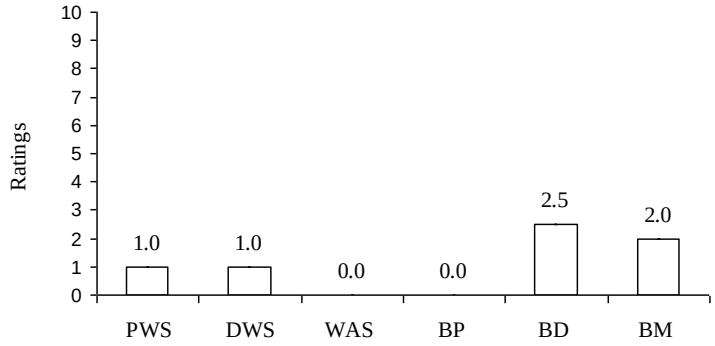


Figure 1 Percentage occurrence of ratings for elephants for water parameters

All the observed animals had access to a perennial source of water which was provided from a water tanker (Figure 2). This source is considered stagnant. Ratings for source of water was 1.0 (SE = 0.0, N = 5). There was no provision for analysis of the water being provided to the animals. Ratings for potability was 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. Ratings for bathing materials used was 0.0 (SE = 0.0, N = 5).



PWS: Perennial water source DWS: Drinking water source WAS: Water analysis status
BP: Bathing place BD: Bath duration BM: Bathing materials

Figure 2: Ratings for water sub-parameters

Opportunity for exercise

The animals were walked for 1 km for a duration of 1 – 2 hrs. Captive animals are usually restricted in terms of space provided to them for movement. This results in a lack of exercise. The opportunity provided for walking the animals was rated. Ratings was 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 was 2.4 (SE = 0.0, N = 5) as the shelter and sleeping place were the same. Rating for sleep duration was 10.0 (SE = 0.0, N = 4).

Social interaction

All five elephants were said to be 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 was 8.0 (SE = 0.51, N = 4) with ratings for individual elephants ranging from 6.9 – 9.0 (Figure 3).

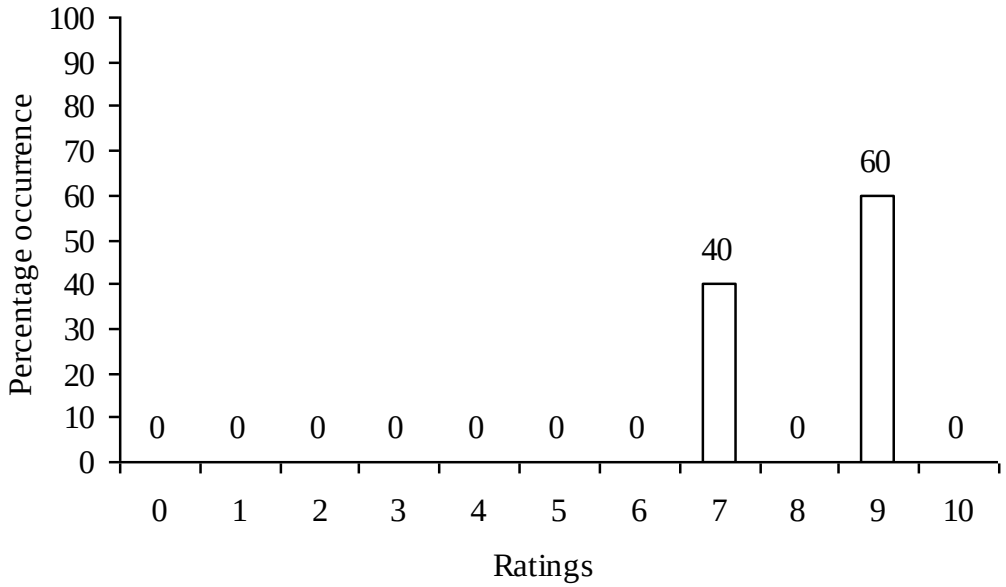
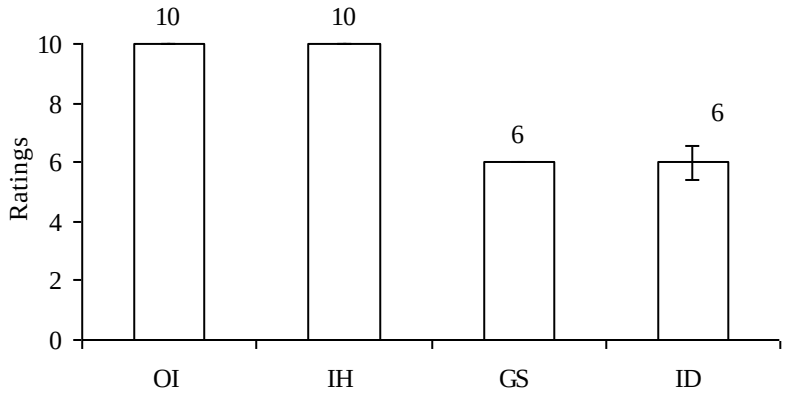


Figure 3: Percentage occurrence of ratings for interaction

All the observed animals were said to be allowed to interact with other animals in the group. Rating was 10.0 (SE = 0.0, N = 5). Duration for which interaction was allowed was rated. Rating was 10.0 (SE = 0.0, N =5). Distance between animal was rated to include interactions involving touching. Rating was 6.0 (SE = 0.58, N= 5) with three animals getting a score of 10.0 (Figure 4).



OI: Opportunity to interact IH: Interaction hours
GS: Group size ID: Interaction distance

Figure 4: Ratings for interaction sub-parameters

Behaviour

Four elephants were described as quiet and one as reliable. The male was also said to be reliable. Laxmi, a forty-year-old female was reported to exhibit stereotypic behaviour by continuous movement of its head. Prabha, another forty-year-old female, did not exhibit stereotypy.

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 (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 were chained all the time except for show timings and bathing. Mean chaining duration was 20.8 hrs (SE = 0.33, N = 5).
2. Bahadur (52 yrs., male), Prabha (35 yrs., female) and Rupa (50 yrs., female) were tied with spiked chains
3. Mean chain weight (for legs) was 15.6 kgs (SE = 0.65, N = 5).
4. Chain size was 50 cms^2.
5. Chain length was 4.6 m (SE = 0.24, N = 5).

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

Work

Work type, as reported by the circus owner, was to perform ‘pooja’ in front of an audience. However, the elephants were also reportedly being made to 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 from 1 p.m to 9:30 p.m.

Entertainment forms one of the reasons for maintaining elephants in circuses. The nature of work which the elephants performed was rated. Work type which was alien to their natural behaviour was given low rating. Mean rating was 2.0 (SE = 0.53, N = 5) with one elephant, Geeta (42 yrs., female) not given any work. There was no provision for water during work. However, the animals were provided food in the form of fodder and coconuts during work. Rest duration was 2.5 hrs during 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 & 'ghee', 'banyan' leaves and coconut were provided (Table 1). Paddy straw was given an average of 9 times/ day.

Table 1: Type of food and quantity provided for the elephants in the 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 kgs	5 kgs	7 kgs	2-3 bundles	3 kgs

The kind of food provided to captive elephants is usually under the control of the animals' human handlers. Low rating was given if the animal was not allowed to free ranging for food, provided with fewer types of food and an account of the diet was not maintained (Figure 5). Overall mean rating was 1.4 (SE = 0.76, N = 3).

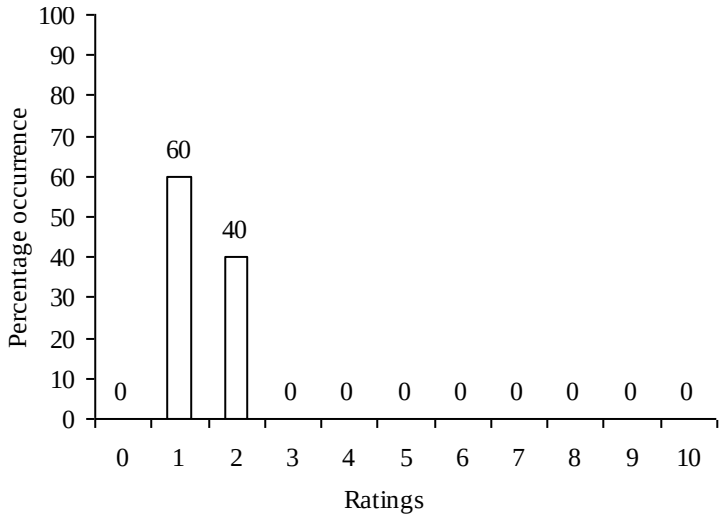
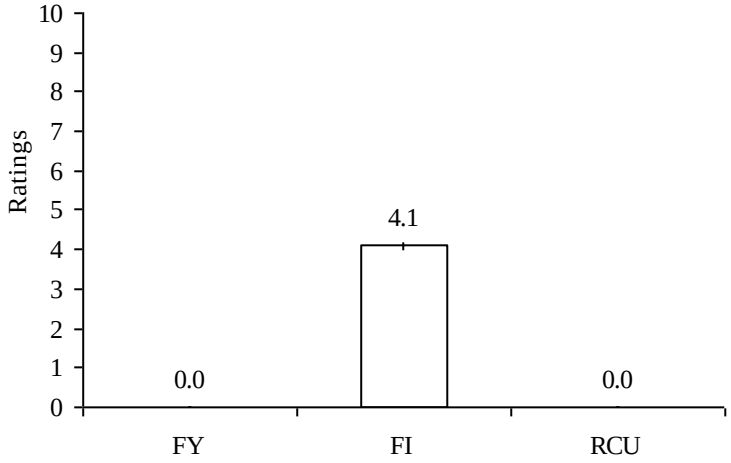


Figure 5: Percentage occurrences of ratings for Food

Low ratings were given if the animal was not allowed to free ranging to browse/ graze (Figure 6). Rating was 0.0 (SE =0.0, N =5). The number of food items provided was rated in the context of whether the animal was given only stall feeding or not. Mean rating was 4.1 (SE = 0.12, N = 5) implying that animals were given at least seven different types but allowed only stall feeding.



FY: Food provision FI: Food items RCU: Ration chart usage

Figure 6: Ratings 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 living minimizes the alien nature of a captive environment. Occurrence of oestrus cycles was reported to be "unknown" for the adult female elephants. Rating for exposure to males was 0.0 (SE = 0.0, N = 4).

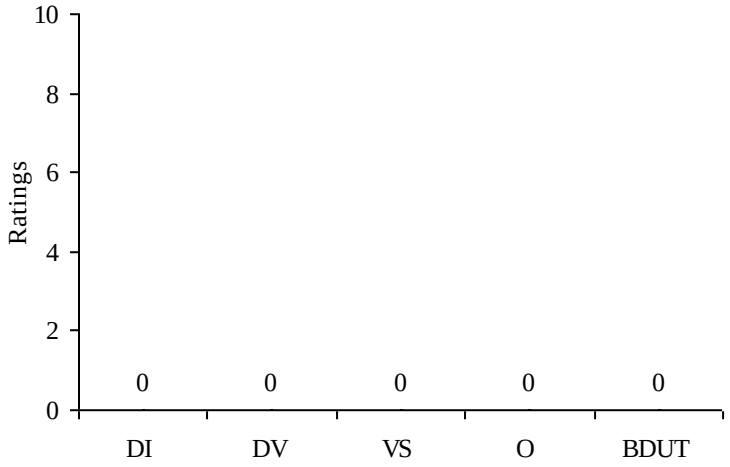
Reproductive status of the single male, Bahadur (52 yrs.) was not known. There were no reports of this elephant having sired any offspring. Records were not available regarding the 'musth' status.

Health status

Disease/Injury occurrence

1. Three of the five elephants were said to 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 were dewormed/ vaccinated.

The health of the animal is one way of assessing its welfare status. This was rated across five sub-parameters. Overall mean rating was 0.0 (SE =0.0, N= 5). Three of the animals were reported to have foot-related problems. Rating was 0.0 (SE = 0.0, N =3). None of the observed animals were said to have been vaccinated (N = 5). Oiling, the application of oil on the animal, was not done (Figure 7) for any of the animals (N = 5).

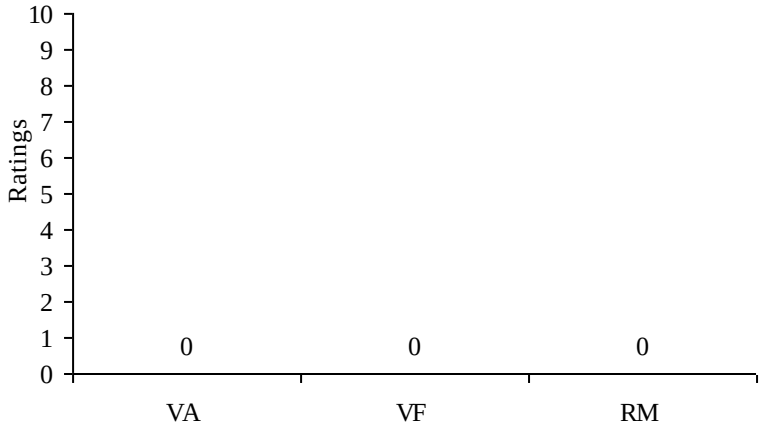


DI: Disease and injury DV: Deworming status VS: Vaccination status
O: Oiling done BDUT: Blood/dung/urine test

Figure 7: Ratings for health sub-parameters

Veterinary care

Availability of a veterinary doctor, veterinary care facilities and maintenance of records was evaluated. Overall rating was 0.0 (SE = 0.0, N = 5) with absence of any facility (Figure 8) and lack of any record (service/clinical/other records).



VA: Veterinary doctor availability VF: Veterinary care facilities
RM: Record maintenance

Figure 8: Ratings for veterinary care sub-parameters

The overall ratings for elephants in this circus was 2.75 (SE = 0.17, N = 140) implying poor conditions of welfare for the animals with 88% of the ratings being less than three (Figure 9)

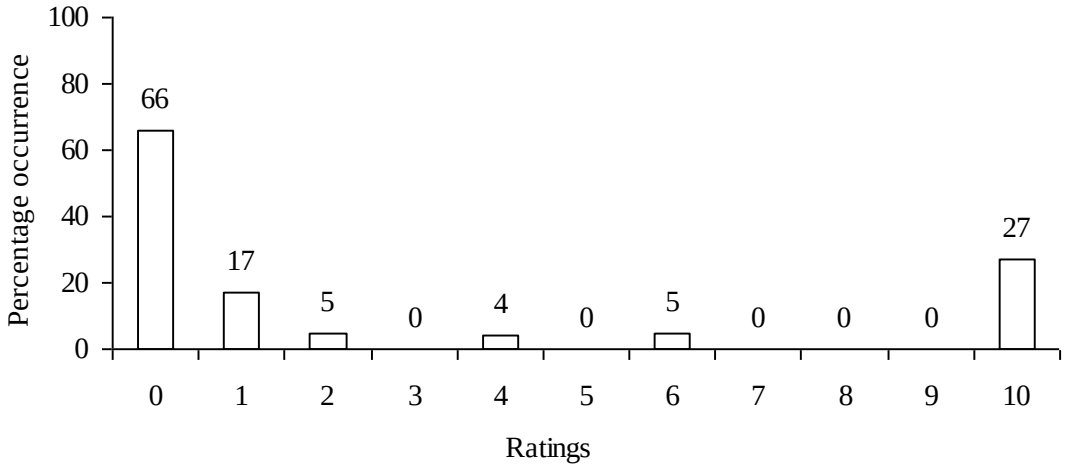


Figure 9: Percentage occurrence of ratings for elephants

Mahout/ cawadi

Socio economic and welfare status

Mean age of the mahout/ cawadi associated with the elephants in the circus was 24.5 yrs. (SE = 0.71, N =4). The ratio of elephant to handler was 1:0.8. Mean experience in this job was 5.1 yrs (SE = 0.69, N = 4).Mean experience with his elephant in the circus was 1.8 yrs (SE = 0.48, N = 4). Traditional occupations of the handlers were goldsmith, butcher and weaver. Mean annual salary provided was Rs. 30,000/- (SE = 27.7, N =4).

Only one handler had joined the profession as it was a tradition. The others had joined for the sake of employment. Each mahout/ cawadi spent a mean of 6 hours with his elephant (SE = 0.35, N = 5). All the handlers used a tool to control their elephant and this was a staff. The number of elephants the handlers had worked with ranged from 2 – 18. Three of the five handlers were said to consume alcohol. Frequency ranged from "after work" to "frequently". Welfare of the elephant handler was evaluated in terms of his socio-economic profile (Figure 10). Experience in handling elephants was also rated. Overall mean rating for mahout/ cawadi was 3.24 (SE = 0.04, N = 44).

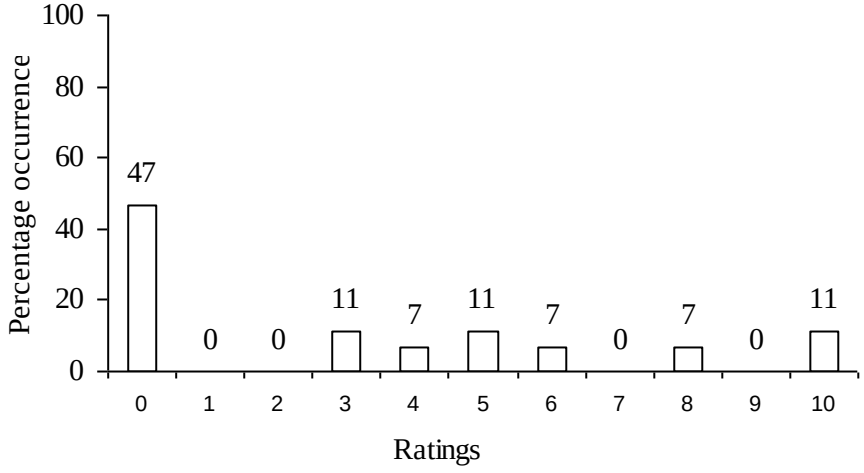
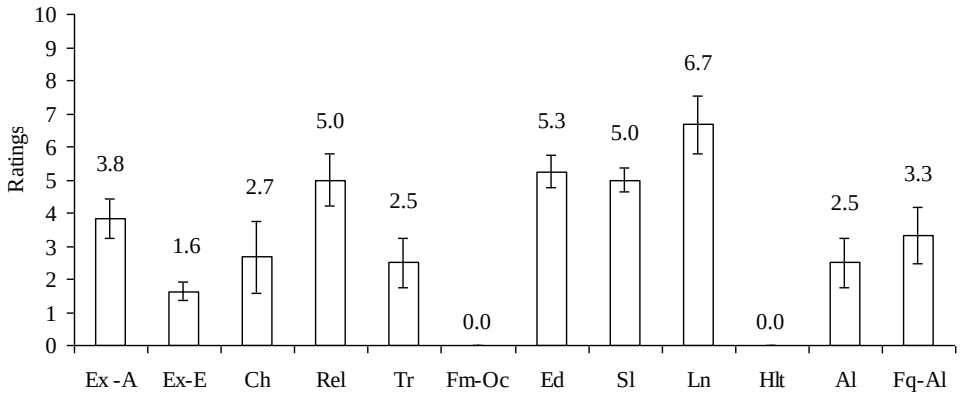


Figure 10: Percentage occurrence of ratings for mahout/cawadi

Experience in the job accounting for more than 50 % of the handler's age was given high rating. 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 is likely to mean less stress for the animal and handler in the absence of frequent changes. Mean rating was 1.63 (SE = 0.27, N = 5).

Rating was designed based on the capacity of the income given, to support a family of four. Rating was 5.0 (SE = 0.36, N = 4) implying moderate state of salary paid to the handlers. Consumption of alcohol by the handler was given a low rating (Figure 11). Mean value was 2.5 (SE = 0.75, N = 4) with three of the four handlers interviewed said to be consuming alcohol.



Ex-A: Experience as % of handler age
Ex-E: Experience as % of elephant age
Ch: Reason for choosing this profession
Rel: Having mahout/cawadi as relatives
Tr: Training received
Fm-Oc: Family occupation
Ed: Education status
Sl: Salary paid
Ln: Languages known
Hlt: Health check-up done
AL: Alcohol consumption
Fq-Al: Frequency of consumption

Figure 11: Ratings for mahout/cawadi sub- parameters

Corresponding with low rating of the animals, rating for the welfare status of the handlers was also very poor (Figure 12).

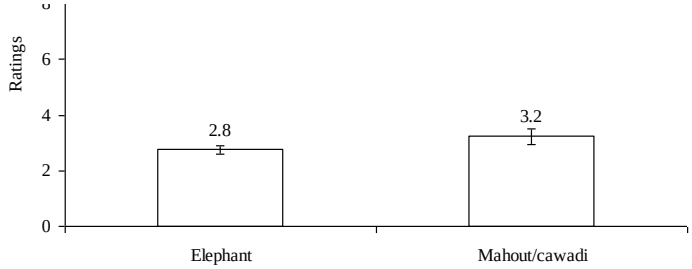


Figure 12: Comparison of overall mean ratings

Discussion

The overall ratings for elephants in this circus were 2.75 indicating poor conditions of welfare for the animals with 88% of the ratings being less than three. This rating assumes even more significance considering the fact that these elephants were reported to 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.

Low rating for this circus could be attributed to:

- Confinement of all the animals within a tent-based enclosure for than 20 hours a day. Reports suggest that wild elephants are active for around 20 hours of 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.

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

  c. There was limited access to socialize as the animals were 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.

- 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.

- 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).

- Health care and facilities provided were conspicuous by their absence. None of the animals had access to a veterinary doctor.

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

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

The following aspects need to be considered:

- The handlers of elephants in circuses had very little prior experience.
- This was exacerbated by a low level of experience of handlers with specific individual elephants (maximum years of experience with an animal were five, for managing a 52 yr. male elephant).

- Most of the handlers were reportedly not trained.
- 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 referred

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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 and disseminates the procured information, knowledge and inferences in professional, academic and public forums.

Sahyog mainly deals with rescue of animals that are transported/ slaughtered illegally and takes action against cruelty to animals. People indulging in illegal cow slaughter were booked and the animals rescued, those transporting animals in violation of set norms were also booked. The organization is also involved in rescue and rehabilitation of wildlife used for entertainment/ trade. Snakes and pigeons, among other species, were rescued in the recent past. A circus performing in the city of Hyderabad was made to close its show following Sahyog's efforts; shops engaged in illegal wildlife trade were also closed down. The organization is also involved in creating awareness about animal issues.

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.

Photo Credit: Figures 4e,f,g,6b,8b,10,12b,14a,d,17a,b,19a,b,c,f,23a,b,25a,b:CUPA, all other photographs: **Sahyog** :

Captive elephants in Andhra Pradesh are kept under different management regimes such as circuses, zoos and temples. Keeping systems for these animals vary from providing no natural conditions in a restricted, solitary environment to those that provide a spectrum of opportunities to express species-typical behaviours. This document is based on a survey that was undertaken to obtain data on the living conditions experienced by captive elephants in different management systems.

Compassion Unlimited Plus Action
ANCF ASIAN NATURE CONSERVATION FOUNDATION www.asiannature.org
AHAYOG ORGANISATION HEALTH CULTURE SERVICE PEACE KNOWLEDGE
WSPA World Society for the Protection of Animals