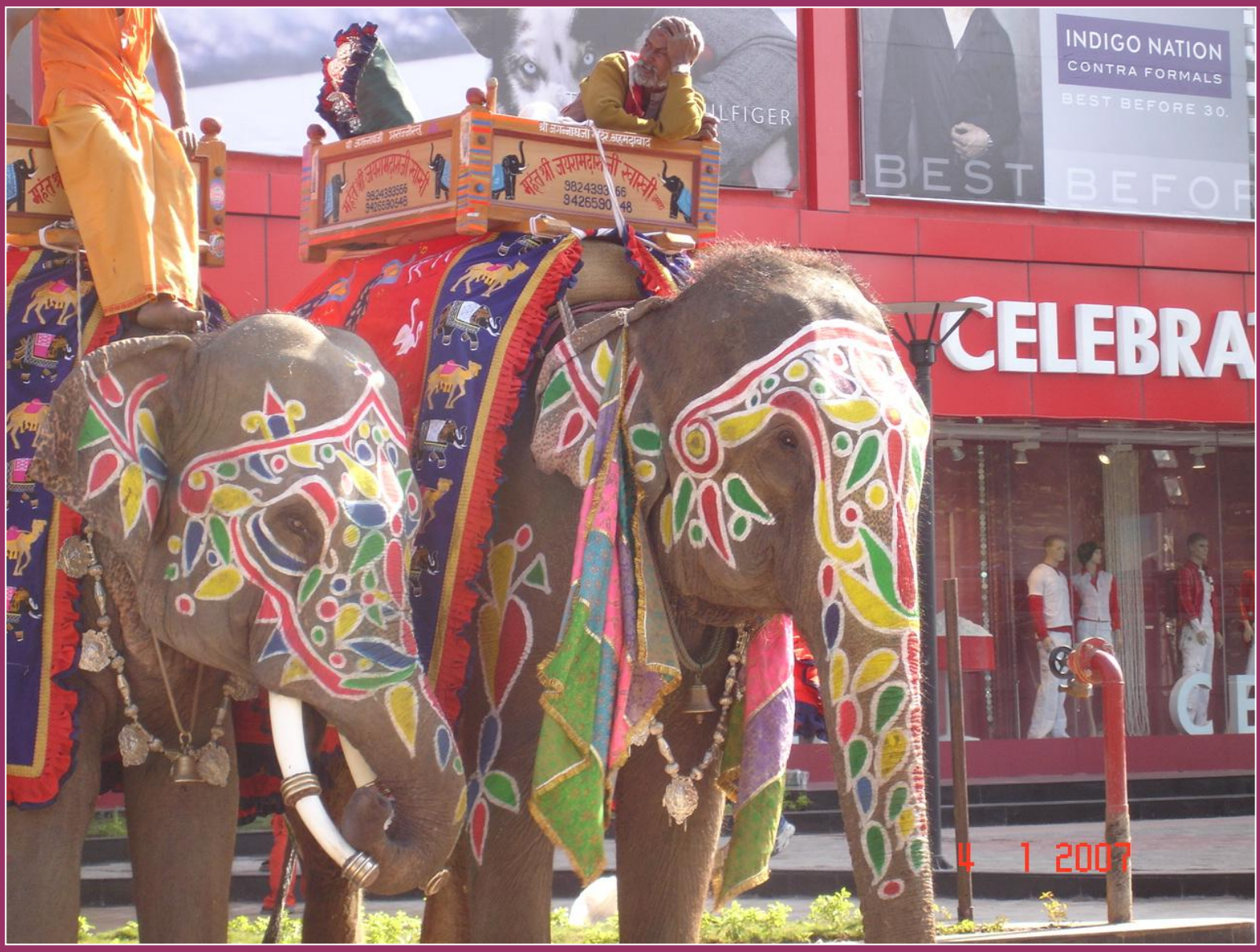
Captive Elephants of Gujarat



An Investigation into the Population Status, Management and Welfare Significance

Surendra Varma, Sujata, S. R and Snehal Bhavsar

Elephants in Captivity: CUPA/ANCF -Technical Report. 6

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Surendra Varma[1], S. R Sujata[2] and Snehal Bhavsar[3]

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Preface

The maintenance of wild animals outside their natural range areas may involve keeping them in an incompatible environment. The state of Gujarat harbors several elephants in captivity, though there have been no records of the occurrence of elephants in the wild in this region for several centuries.

Located on the western side of India, Gujarat is not an elephant range geographical area unlike the southern and eastern sectors. However captive elephants have found their way here mostly through illegal means. Unofficial estimates claim the presence of approximately 100 elephants in Gujarat, while officially 25-30 elephants are said to be kept. With temperatures ranging from 36-42 degrees, the presence of elephants is worrisome and a study of their welfare conditions becomes supremely important.

The investigation on captive elephants in the State of Gujarat is first of its kind and is anticipated to offer much desired insights on the maintenance of captive elephants for the state. The document has three sections: The first section covers overall status of elephants and handlers for the state, with results based on comparing the welfare status of elephants across two management regimes viz. traveling/begging and forest department/zoo. The second section provides insight into the status of captive elephants kept under Kankaria Zoo and Gujarat Environment Education and Research (GEER) foundation. Management regimes of the forest department and the zoo are combined under one category as they come under one management unit of the state government. The third section describes the details of the status of traveling and begging elephants in Gujarat.

Acknowledgements

The captive elephants in Gujarat were surveyed with financial assistance from the World Society for Protection of Animals (WSPA), UK.

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Section 1:
Captive Elephants of Gujarat

Executive Summary

The occurrence of elephants in Gujarat is restricted to those found in captivity, with no reports of wild Asian elephants in this region. The presence of elephants, under human control, in regions of extreme temperature variations makes it imperative to study the status of their welfare in captivity. This investigation aims at assessing the welfare of captive elephants, and the socio-economic and professional status of elephant handlers (mahouts/cawadis) in Gujarat.

Data was collected through observation of animal/s and interviews with personnel/management, representing various aspects of the elephant's life in captivity. The data was grouped under different parameters, based on its identity in terms of physical/social/managerial/physiological relevance to the animals. A team of experts rated different parameters of importance to the welfare of captive elephants and this rating was then used to assess the welfare status of elephants and mahouts/cawadis.

Mean age across all the captive elephants studied in Gujarat was 33 years with female age ranging from 20 – 40 years and male age from 25 – 43 years. All the elephants observed, across ownership, were said to be either purchased or obtained from circus companies.

Traveling/Begging (TrvBg) elephants were housed in man-made enclosures with little or no vegetation whereas Forest Department (FD)/Zoological Garden (Zoo) elephants were provided with a more natural environment. The rating for shelter showed a difference of 86 % from the Expert Rating (ER) for TrvBg elephants while it was 48% for FD/Zoo elephants.

TrvBg elephants depended on their work schedule for availability of water whereas while in shelter it was provided with water from by ponds/taps/buckets. FD/Zoo elephants had access to ponds/rivers for water. A difference of nearly 86% was observed for TrvBg elephants when compared to the E-R. This difference was only 23% for FD/Zoo elephants.

Rest and sleep availability was restricted and controlled by the elephants' handlers for TrvBg elephants while it was unrestricted for FD/Zoo animals. A difference of 54% from the E-R was seen for TrvBg elephants while it was 14% for FD/Zoo elephants.

TrvBg elephants were at the mercy of their handlers, making the animals to walk on unsuitable surfaces and for durations decided by them. FD/Zoo elephants were provided with natural conditions with limited human interference for this activity. This parameter showed a deviation of 70% for TrvBg elephants while it was only 2% for FD/Zoo animals.

There was opportunity for interaction among the TrvBg elephants; though it was restricted by factors such as chaining and/or their work schedule. For FD/Zoo animals, the number of animals available for interaction was low. Both TrvBg and FD/Zoo elephants differed to comparable extents (50% and 53% respectively) from the E-R.

TrvBg elephants were subjected to long work hours with little provision for food/shade/rest. None of the FD/zoo elephants were given any work. A deviation of 84% was observed for TrvBg elephants while there was 100% concurrence for FD/Zoo elephants.

TrvBg elephants were not allowed to range free to browse/graze and were given only stall feed. FD/Zoo elephants were given both stall feed and free ranging opportunity. TrvBg elephants exhibited a deviation of 71%, from E-R, whereas it was 37% for FD/Zoo elephants

None of the TrvBg elephants, neither male nor female, exhibited any reproductive signs. FD/Zoo elephants were exposed to animals of opposite sex, allowed to mate; there were however no reports of successful births. TrvBg elephants showed a deviation of 100%, from E-R, while FD/Zoo elephants showed a deviation of 37%.

All TrvBg elephants had health problems and no veterinary routines were practiced. FD/Zoo elephant too had health problems with a few veterinary routines being practiced for the animals. A deviation of 80% was observed for TrvBg elephant while this was 73% for FD/Zoo elephants.

Elephants used for TrvBg had access to veterinary doctor. However, there was no regularity about visits and records were absent. FD/Zoo elephants had access to veterinary doctor, with regular visits and records were maintained. TrvBg elephants showed a deviation of 97% from E-R for this parameter; a deviation of 47% was observed for FD/Zoo elephants.

Welfare status of the handlers was assessed by considering his/her socio-economic status and professional experience. A deviation of 70% and 75% was observed for professional experience and socio-economic status, respectively, of the TrvBg elephant handlers. A deviation of 51% for both professional experience and socio-economic status was recorded for FD/Zoo elephant handlers.

Overall rating for the welfare status of captive elephants in Gujarat showed a deviation of 77% from the E-R for TrvBg elephants and 32% for FD/Zoo elephants.

Reccomendations

For Traveling/Begging elephants:

a. Provision of a shelter in a natural environment, when not working
b. Unrestrained access to other elephants, water and food within this shelter
c. Provision of temperature control in the shelter during winter
d. A work schedule that nears the activity pattern of wild elephants: working during cooler parts of a day and rest during the hottest periods; provision of food/water while working
e. Maintenance of records of ownership/health/management practices followed

For handlers of TrvBg elephants:

a. Provision of staff quarters
b. Better wages and insurance cover
c. Greater transparency regarding their training/control methods while handling elephants; restraint in the use of tools/implements

For FD/Zoo elephants:

a. A more natural environment in terms of letting the elephants free at night
b. Provision of some "occupation" for the animals: encouraging foraging behaviour which replicates the 12-18 hr activity (to the extent possible) seen in the wild

FD/Zoo personnel:

a. Training personnel to note the activity of each of their animals, to observe any abnormalities, behaviourally and health–wise

Temperatures in Gujarat touch 42 degrees Celsius during summer. Except for 3 months of winter, all afternoons are hot. Elephants should be banned from begging or participating in processions which is usually done from 8.00 a.m to 7.00 p.m and sometimes at night during weddings.

Gujarat should have a rescue centre for elephants. Reports are available of person/s willing to donate 200acres of land adjoining Surpaneshwar Sanctuary on banks of the river Narmada. This proposal should be assessed for the viability as an option.

A committee should be appointed to regularly monitor health and upkeep of elephants in the state and elephant expert should be brought in for regular check up once a year.

There needs to be a ban on elephant rides and blind elephants should be confiscated from the owners.

Proper retiring area, food and water facility, drainage and dung disposing facility need to be developed immediately for those institutions that are serious about retaining their elephants.

Elephants should not be tied by spiked chains and limited use if not ban on the use of Ankush should be imposed. Illegally kept elephants need to be rescued immediately.

Introduction

The presence of wild animals outside their existing natural range occurs only under captive conditions. The maintenance of wild animals beyond their natural range areas may involve exposing the animals to unsuitable environments. The practice of keeping elephants in captivity in such areas can be for different reasons – as part of a zoo, as part of tradition and/or for commercial purposes. Asian elephants are said to occur in diverse habitats but never under arid conditions (Sukumar, 2003). The occurrence of elephants in Gujarat is restricted to those found in captivity, with no reports of wild Asian elephants in this region. However, use of ivory objects has been recorded from archeological sites during the Indus Valley Civilization (Bist, et al., 2002/03). The state of Gujarat is said to be home to nearly 25 to 30 captive elephants (Anon, 2000) while unofficial estimates put the number at nearly 100. The State harbours several elephants in captivity – in temples, by individuals and by the Forest department.

Objective

The presence of elephants, under human control, in regions of extreme temperature variations makes it imperative to study the status of their welfare in captivity.

A survey was undertaken and the data gathered was used to:

- Assess the welfare of captive elephants in Gujarat
- Assess the socio-economic and professional status of elephant handlers (mahouts/ cawadis)

Method

Elephants are exposed to a number of conditions in captivity, conditions that affect the lives of these animals, as a consequence of differences from wild, free-ranging conditions. Life in captivity is controlled by people; from their physical space to their biological needs, elephants depend on their human benefactors. Hence, the existence of conditions regarding the physical environment, social and behavioural opportunities along with availability and access to veterinary personnel and facility were considered while assessing captive elephant welfare. Data was collected (Figure 1a and b), through observation of animal/s and interviews of personnel/ management representing various aspects of the elephant's life in captivity. The data was grouped into different categories

a

b

Figure 1a & b: Data collection through interviews with officials and elephant handlers

(parameters) based on its identity in terms of physical/ social/ managerial/ physiological relevance to the animal. These parameters were brought under a rating scale based on welfare significance (Varma, 2008, Varma et al, 2008). A team of experts, comprising of wildlife biologists, welfare activists, elephant managers, veterinary doctors and handlers reviewed the rating scale and welfare significance (Varma and Prasad, 2008). This rating as reviewed and suggested by the experts was then used to assess the welfare status of elephants and mahouts/cawadis for the elephants in Gujarat.

The 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 specialist, wildlife veterinary experts, mangers from protected areas, those have both wild and captive elephants and other wildlife, personals from welfare organisations and elephant handlers) were invited to assess the welfare based on welfare parameters and their significance through a 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 rating for each parameter. For example mean expert rating of 8.0 (SE= 0.5, N=29) for a parameter 'floor' and 9.0 (SE=0.4, N=31) was arrived for 'source of water' 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.
- 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.
- Elephants were visited on the ground; data for each parameter was collected by direct observations or with the interviews of people associated the animal. Mean Rating (M-R) was calculated for a given parameter, along with its sub-parameter. Thus the Mean Rating (M-R) denotes welfare status of existing conditions on the ground for the particular parameter.
- In this investigation, variables which represent a common feature of the captive condition have been grouped to form a parameter. 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. M-R is also based on similar lines.
- E-R and M-R for each of the regime here represent the average across related parameters observed for the regime. For instance, E-R / M-R for a parameter "shelter" represent the average of related parameters (termed sub-parameters) such as type, flooring, size, and shade availability.

- 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 expert rating (E-R) and existing status (M-R) have been used to indicate the professional/ socio-economic status of value to the handler and his elephant.

Results

Elephants have been classified into different categories based on the data provided about their ownership. Within a certain ownership type, based on the predominant work performed, further classification has been done. Hence, in this report, there are two types of owners: Forest Department/Zoo (FD/Zoo) and Private owners. Elephants belonging to Private owners have been labeled Travelling-Begging (TrvBg) as this is the predominant feature of their work, and concurrently of their captive condition.

Population status

Mean age across all the captive elephants studied was 32.6 years (SE = 1.1, N = 25) with female age ranging from 20 – 40 years and male age from 25 – 43 years (Figure 2a & b).

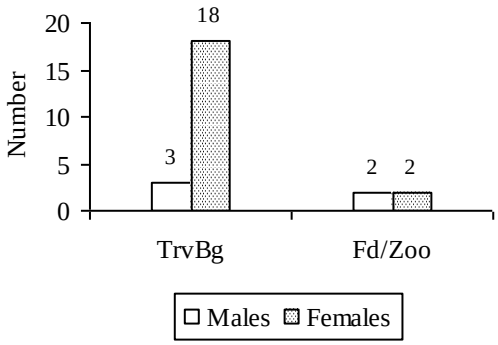

Figure2a: Sex based distribution

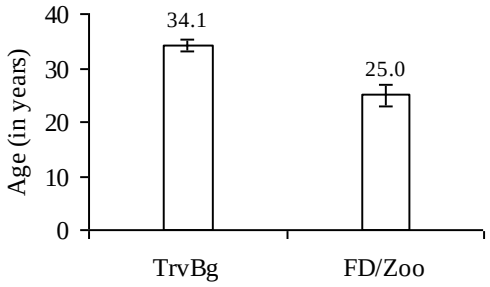

Figure 2b: Age based distribution

Source of elephants

This parameter is important as it shows the nature of living conditions to which the elephants were exposed. Low rating is given for animals which have been purchased/exchanged across institutions as this involves changes in management/living conditions for the animal following purchase/exchange. All the elephants observed, across ownership, were said to be either purchased or obtained from a circus. A deviation of 80%, from E-R, was noticed for both types of regimes.

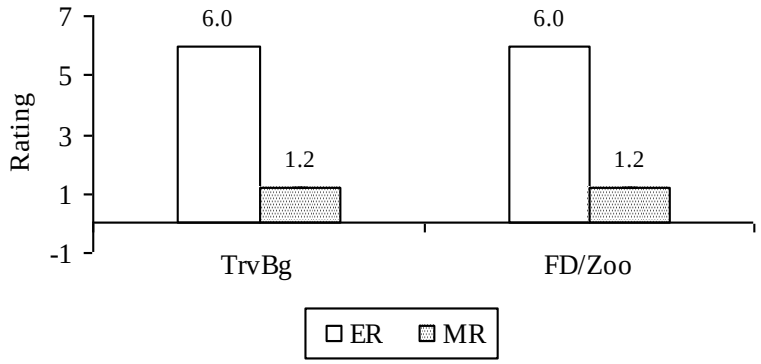

Figure 3: Comparison of rating for source of elephants across management regimes

Shelter

A feature of prime importance with respect to actual living space provided to the elephant is availability of forest conditions to range-free. Kane et al. (2005) state the need to consider the physical vigour of elephants while maintaining them in captivity, implying the need to consider the vast home-ranges occupied by these animals in the wild, the 12 – 18 hour period involved in foraging and other species-typical activities performed in a day. The quality of the enclosure/shelter could play a greater role in confined animals (Maple, 2007). Presence of man-made structures, confinement within such structures, lack of hygiene, all play a role in determining welfare of the elephant in the absence of unrestricted movement in forest areas. Enclosures with hard floors can have a negative impact on the health of the animal (Benz, 2005), accumulation of water on the floor can lead to foot problems, and poor hygiene can lead to infections (BIAZA, 2006).

Traveling-begging elephants were housed in man-made enclosures with little or no vegetation (Figure 4a & b), with tin/asbestos roofs and concrete floors. Hygiene maintenance was irregular. FD/zoo elephants were provided with acres of space with natural earthen floor and vegetation.

a

b

Figure 4a: Male elephant, housed at the Geer foundation at Gandhinagar b: Elephants from Hanuman Temple in Baroda, elephants are kept tied under a tree.

Hygiene/maintenance was reported to be good.
The rating for shelter showed a difference of 86% from the E-R for TrvBg elephants while it was 48% for FD/Zoo elephants (Figure 5).

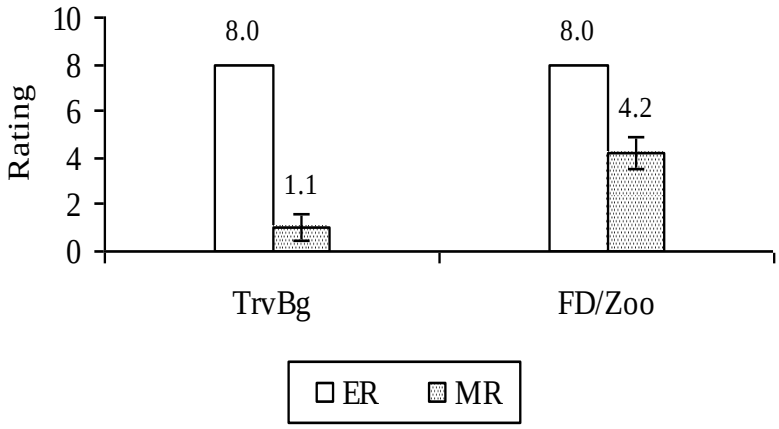

Figure 5: Rating for shelter for the captive elephants in Gujarat

Water and related features
TrvBg elephants depended on their work schedule for availability of water whereas while in the shelter it was provided from ponds/taps/buckets. FD/Zoo elephants had access to ponds/rivers for water. Availability of water not just for consumption, but also for performance of species-typical activities has been considered for rating.

Provision of free-flowing water sources with surrounding natural forest environment takes care of such activities as mud-wallowing, rubbing skin against trees/rocks – activities said to assist in skin care (Kurt and Garai, 2007). Skin care, for captive elephants, is usually taken care of by the practice of a handler rubbing the elephant's skin while bathing. Hence, material used while bathing the animal has also been rated.

Elephants used for Travel/begging moved from place to place, hence source of water for drinking/bathing was random and limited in its availability to the animal. Water was provided only once a day and no scrubbing materials were used while bathing the animal. FD/Zoo elephants had access to river/pond, the elephants consumed water 3 – 4 times/day and bathed in the river. Water quality tests were not performed.

Based on factors such as availability of running water sources, quantity of water consumed and bath related aspects, a difference of nearly 86% was observed for TrvBg elephants when compared to the E-R. This difference was only 23% for FD/Zoo elephants (Figure 6).

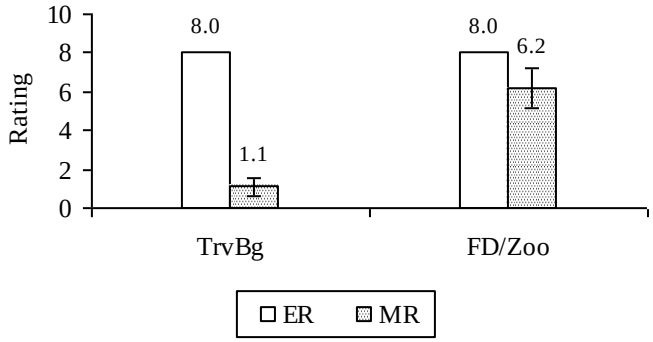

Figure 6: Rating for Water for the captive elephants in Gujarat

Rest and Sleep

Opportunity for rest and sleep in suitable conditions provides a degree of near natural environment for captive elephants. Unrestricted access to these two activities in forest areas would be considered ideal for such animals. Hence, opportunity for these two activities along with duration and space provided was considered for rating. Sub-parameters related to rest and sleep were pooled together to obtain a single rating. Rest and sleep availability was restricted and controlled by the elephant handlers for TrvBg elephants. The elephants were chained at night during their sleep period. Rest and sleep was unrestricted for FD/Zoo animals. These animals were also chained during their sleep period at night. A difference of 54%, from the E-R, was seen for TrvBg elephants while it was 14% for FD/Zoo elephants (Figure 7).

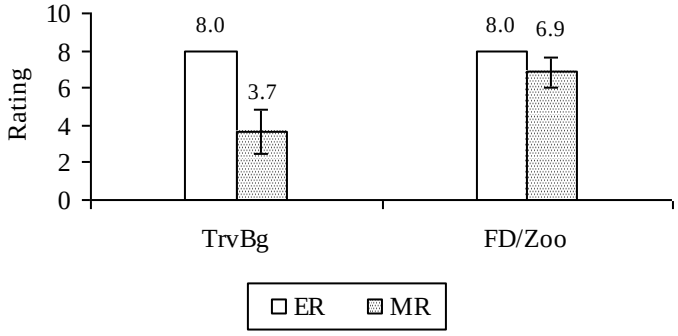

Figure 7: Rating for rest and sleep for the captive elephants in Gujarat

Opportunities for walk

Foraging and searching for mates, along with related activities involve moving across varied habitat for wild elephants (Poole and Granli, in press). Captive elephants are generally confined to restricted space which impinges on the performance of natural activities. Hence, opportunity to walk was considered as a parameter consisting of sub-parameters such as time of day when walked, duration of this activity and nature of terrain. TrvBg elephants were controlled by their handlers on all aspects of this parameter, making the animals to walk on unsuitable surfaces and for durations decided by the handlers. FD/Zoo elephants were provided with natural conditions with limited human interference for this activity. This parameter showed a deviation of 70% for TrvBg elephants while it was only 2% for FD/Zoo animals (Figure 8).

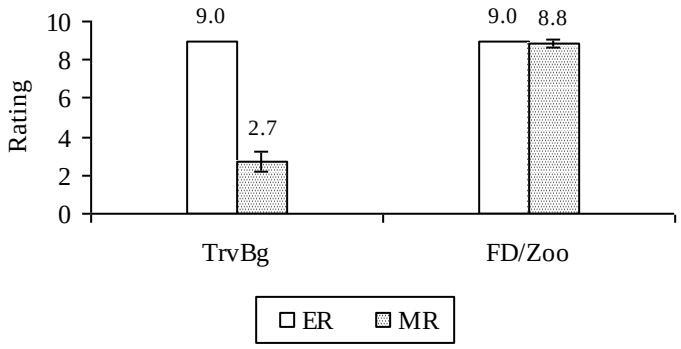

Figure 8: Rating for walk for the captive elephants in Gujarat

Social interaction

Elephants are known for their long-lasting relations among conspecifics (Sukumar, 2003), knowledge of individuals among a group of many in a herd and the gradual dispersal of males from their natal herds is critical (Poole and Moss, 2008). All this entails a complex social organization integral to the biology of the animal. The absence of or the occurrence of circumscribed social organization among elephants in captivity (Kurt and Garai, 2007) has consequences on welfare of the animal through its inability to perform its natural repertoire of behaviour.

While there was opportunity for interaction among TrvBg elephants, it was restricted by such factors as chaining the animals at night and/or their long work schedule (Figure 9a & b) in the morning.

a

b

Figure 9: Source of interaction a: while feeding b: during work hours

For FD/Zoo animals, the number of animals available for interaction was low. The elephants were allowed to interact throughout the day, but chained at night. Both TrvBg and FD/Zoo elephants differed to comparable extents (50% and 53% respectively) from the E-R (Figure 10).

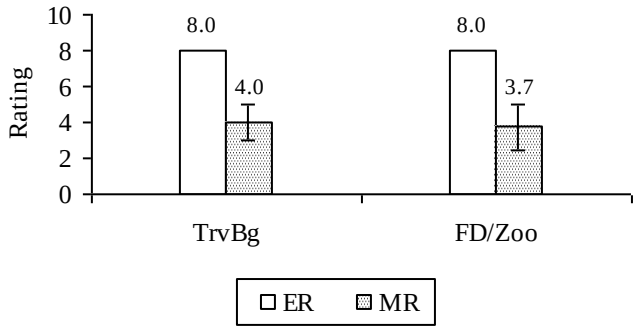

Figure 10: Rating for social interaction for the captive elephants in Gujarat

Chaining

Use of chains to control captive elephants is a wide-spread practice. However, Gruber et al. (2000) report increased frequency of stereotypy among chained elephants when compared to penned animals. Also, the practice of chaining the same region of an elephant's body can lead to abrasion and development of wounds which maybe tough to heal (Kurt and Garai, 2007). High rating has been assigned to reflect absence of chaining, opportunity to range-free, chaining of fewer regions of the body.

All TrvBg elephants were chained (Figure11 a & b) at night with chains of length of one meter and were not allowed to range free. Duration of chaining varied from 8 – 12 hours.

a b

Figure 11a & b: Spiked foot collar with which the elephants are tied Front two legs are tied together without any gap and both back legs with spiked bands.

FD/Zoo elephants were also chained at night using a five meters chain; two elephants were, however, provided opportunity to range free in the morning. TrvBg elephants experienced 88% deviation form the E-R while FD/Zoo elephants showed a deviation of 71% for this parameter (Figure 12).

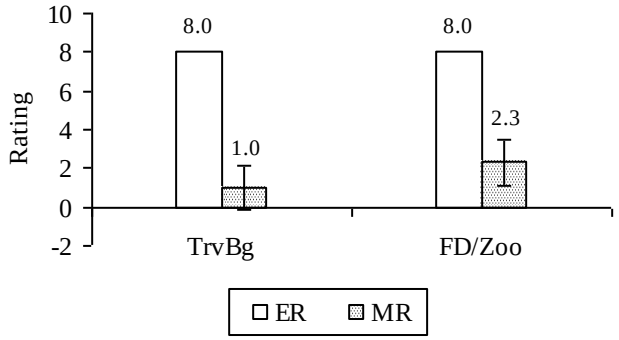

Figure 12: Rating for chaining for the captive elephants in Gujarat

Observed behaviour

Behaviour of animals is moulded by a combination of heredity and experience. Captivity imposes a number of unique experiences on elephants, not encountered by wild elephants. This can have consequences on the observed behaviour of the captive animal such as aggression towards its human captors/occurrence of stereotypy. Stereotypy has been associated with an animal's inability to perform species-specific behaviour/poor housing and management in captivity, among other relevant factors (Gruber, et al., 2000).

The temperament of the animal, occurrence of aggression and stereotypic behaviour were considered for this parameter. All the TrvBg elephants were described as being calm without any stereotypy/aggression. Similarly, all FD/Zoo elephants were described as quiet with only one elephant said to be aggressive having injured/killed people and showed signs of stereotypy. TrvBg elephants showed 100% concurrence with E-R while FD/Zoo elephants showed a deviation of 16% (Figure 13).

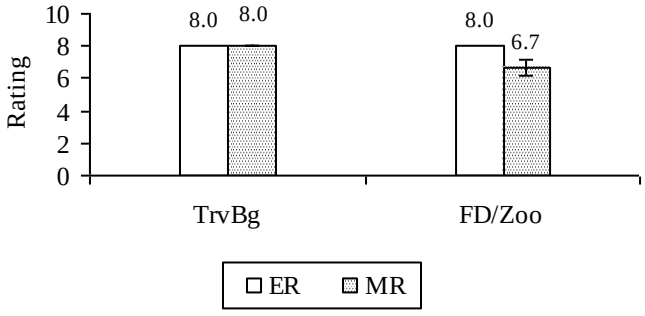

Figure 13: Rating for behaviour for the captive elephants in Gujarat

Work

Some institutions/individuals maintain elephants primarily for their value as work animals. Work conditions such as type, duration, time of day, weight carried, and food/water/rest provided are all under human control. The elephants are severely restricted in their ability to choose. High ratings were designed to represent a work environment replicating natural conditions such as patrolling

inforest areas with unrestricted access to food/water/rest. TrvBg elephants were subjected to long work hours (10 – 16 hr) with little provision for food/water/shade/rest.

Their work involved activities such as blessing/begging from the public, providing tourist rides, being hired for marriages or other functions, being on display in urban centers (Figure 14 a & b) with high human activity and walking several kilometers at a stretch irrespective of ambient weather conditions to different places as part of their work schedule.

a b

Figure 14: Type of work a: Displayed during the opening the Vadodara Central Mall b: Decorated and displayed as begging elephant

None of the FD/Zoo elephants were given any work. A deviation of 84% was observed for TrvBg elephants while there was 100% concurrence for FD/Zoo elephants (Figure 15).

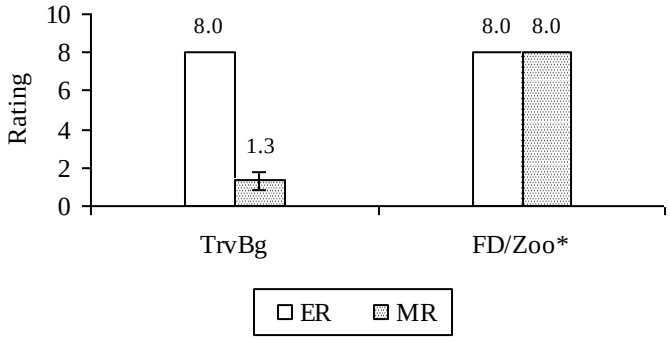

Figure 15: Rating for work for the captive elephants in Gujarat

Food provisioning

Wild elephants feed on a diverse variety of plants (Sukumar, 2000) which involve related activities such as manipulating the food through tusks, trunk or legs (Kurt and Garai, 2007). The learning experience needed to feed on different plants maybe absent in captive situations that maintain single or few elephants. Another important aspect is the relation between work and food types (Kurt and Garai, 2007) with performance of physical exertion linked to food supplementation for animals.

a b

Figure16: a. Temple elephant fed with the offerings of devotees, dry grass and others. b. Circus Elephant fed with dry grass, sugar cane and other titbits that people give.

TrvBg elephants were not allowed to range free to browse/graze, were given only stall feed (Figure 16 a & b). Food types depended on availability (leaves of Banyan – Ficus sp. or Banana – *Musanda* sp., Sugarcane – *Saccharum* sp.) and neither were feed timings fixed nor were ration charts used for TrvBg elephants. FD/Zoo elephants were given both stall feed and free ranging opportunity to browse/graze. Ration charts were used. TrvBg elephants exhibited a deviation of 71% from E-R whereas it was 37% for FD/Zoo elephants (Figure 17).

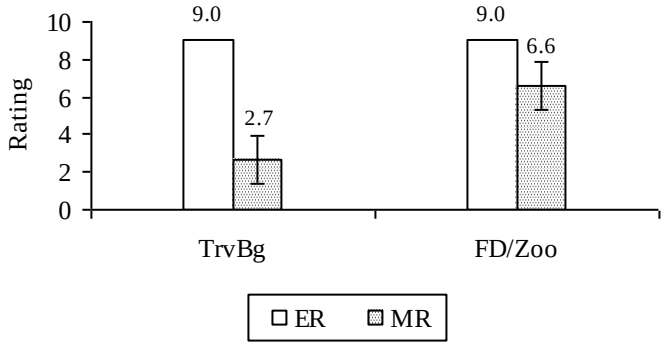

Figure 17: Rating for Food for the captive elephants in Gujarat

Reproductive status

Normal reproductive functioning of elephants involves expression of adult reproductive behaviour, presence of both sexes, opportunities to mate and successful calving. High rating has been designed to represent the occurrence of all these features in a captive situation. None of the TrvBg elephants, either male or female, exhibited any reproductive signs even though they were exposed to elephants of the opposite sex. Features like mating/pregnancy/birth of offspring/siring of offspring were absent for all the animals. FD/Zoo elephants were exposed to animals of opposite

sex, allowed to mate; there were however, no reports of successful births. TrvBg elephants showed a deviation of 100% from E-R while FD/Zoo elephants showed a deviation of 37% (Figure 18).

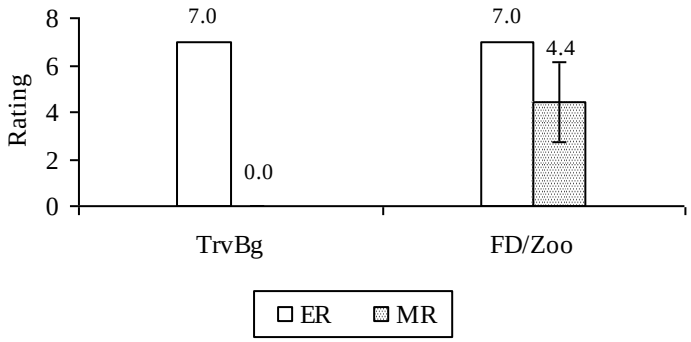

Figure 18: Rating for reproductive status

Health status and veterinary routine

Health among captive elephants is subject to conditions to which they are exposed. Mikota et al., (1994),

a b

Figure 19a & b: Damages to ears through rings embedded, b: Scars of howdah injuries and ankush wounds of the elephants at a temple in Baroda.

state the occurrence of foot problems among elephants in captivity. Exposure to species not encountered in the wild and humans can pose a risk of transmission of diseases (Kaufman and Martin, in press). More importantly, well-being of the animal is compromised during ill-health. Maintenance of proper veterinary schedule for the animals assists in preventing occurrence of disease/exacerbation of injury. All TrvBg elephants had health problems with occurrence of abscess/foot problems/old injury marks (Figure19 a & b), a few female elephants were said to be blind, and one elephant was reportedly being made to walk despite its bad foot condition. No veterinary routines such as deworming/vaccination/testing of dung, blood and urine/measurement

of body weight were practiced. FD/Zoo elephant too had health problems such as wounds/infection of the eye. The elephants were dewormed, but vaccination/application of oil/weighing the animal/testing blood, dung and urine samples were not done. A deviation of 80% was observed for TrvBg elephant while this was 73% for FD/Zoo elephants (Figure 20).

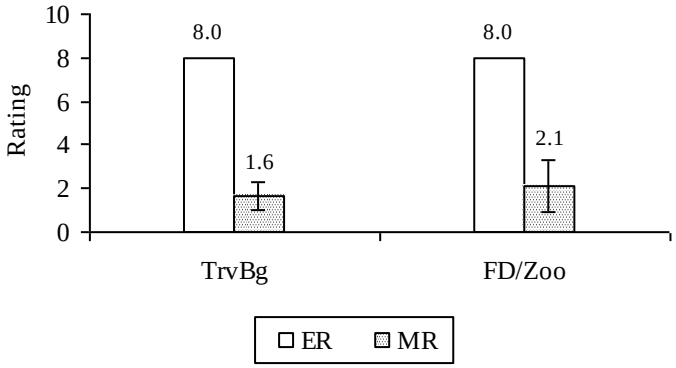

Figure 20: Rating for health status and veterinary routine for the captive elephants in Gujarat

Veterinary personnel and infrastructure

Availability and access to veterinary personnel and proper infrastructure such as clinic facilities/maintenance of records/staff quarters etc., is important in smooth functioning of an institution with captive elephants. Elephants used for TrvBg had access to veterinary doctor who had no experience in treating elephants. There was no regularity about the doctor's visits, which depended on the owner's interest/severity of the problem. No records were maintained either. Facilities such as veterinary clinic facility/staff quarters too were absent. FD/Zoo elephants had access to a veterinary doctor with some experience in treating elephants. Records (health/service/clinical) were maintained. TrvBg elephants showed a deviation of 97%, from E-R, for this parameter, whereas a deviation of 47% was observed for FD/Zoo elephants (Figure 21).

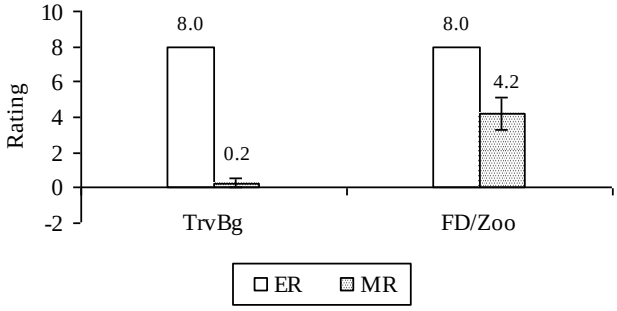

Figure 21: Rating for veterinary personnel and infrastructure for the captive elephants in Gujarat

Mahout/cawadi welfare status

Welfare status of the handlers was assessed by considering his/her socio-economic status and professional experience. Figure 22 (a & b) shows handlers for TrvBg elephants. Figure 23 (a & b) shows comparative ratings for both these types of management regimes. Professional status was

rated considering the handlers, experience with elephants, use of tools to manage his/her animal and training received in this profession.

All the handlers of TrvBg elephants had experience that accounted for 60 – 70% of his age in this profession. Experience with a particular animal accounted for only 30 – 40% of the elephant's age. The handlers were trained on the job. All of them used two types of tools – stick and ankush. The rating for professional experience showed a deviation of 70% from E-R.

FD/ Zoo handlers had experience ranging from 33 – 75% of the elephant's estimated age. Here too, the handlers had trained on the job. All used tools to control their elephant. A deviation of 51% was observed from E-R for this parameter.

a b

Figure 22: a. Muslim mahouts from the states of UP or MP, b. Mahout of the blind elephant which had come for the opening of the Vadodara Central Mall opening.

Socio-economic status was rated using parameters such as salary drawn, accommodation availability, insurance cover, the practice of alcohol consumption, and provision of health check-ups. The handlers of TrvBg elephants were paid Rs. 2000 – 2500/- per month, each had four to five children to support and no accommodation was provided. There was no provision of insurance cover/health check-up. All the handlers were said to consume alcohol. A deviation of 73% was observed for socio-economic status of the handlers

FD/Zoo handlers were paid an annual salary ranging from Rs.5,000-6,000/month(US$:48.0), were all permanently employed, provided with accommodation, number of children per family ranged from 2-3. None of the handlers had any health check-ups/ were covered by insurance. All consumed alcohol. A deviation of 51% from E-R was noticed for this parameter.

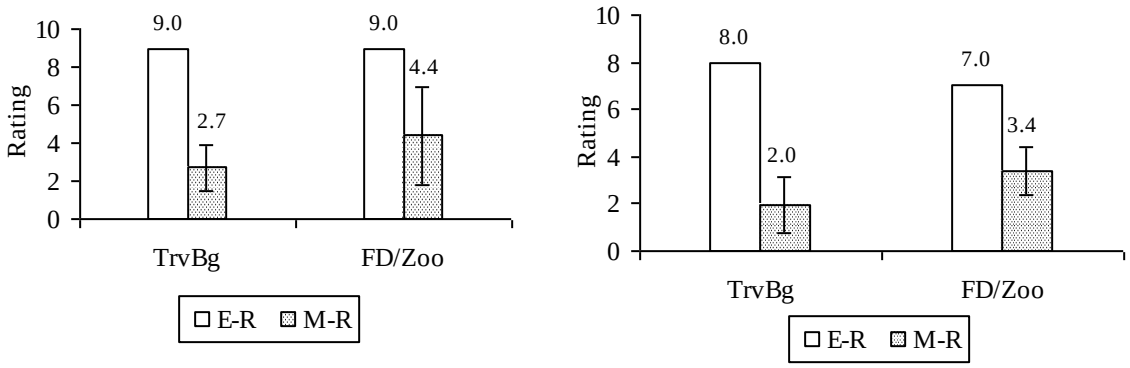

Figure 23 (a and b): Rating for professional and socio-economic status for handlers in Gujarat

Overall rating across regimes

The ratings show a deviation of 77%, from the E-R, for TrvBg elephants, the deviation being 32% for FD/Zoo elephants (Figure 24).

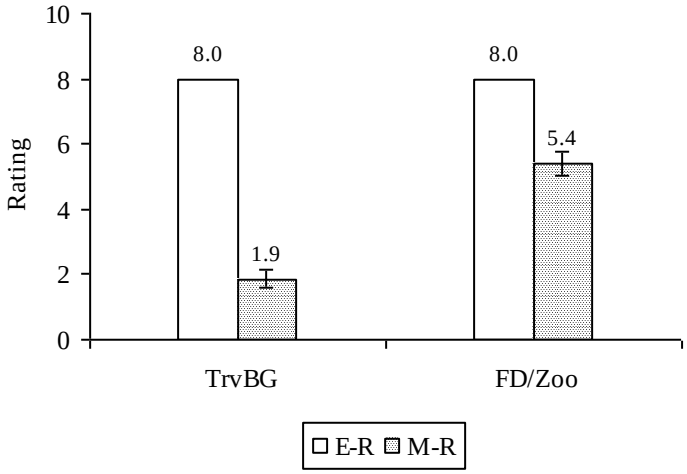

Figure 24: Overall rating across regimes for the captive elephants in Gujarat

Discussion

Captive environments provide features which elephants do not/rarely/never encounter in the wild. Stroud (in press) states the need to provide a captive environment based on the behaviour and biology of the animal. In this report, welfare has been assessed in terms of the deviations experienced by captive elephants, in their physical, physiological and social environment, from those observed in the wild. Along with this, access to veterinary and management practices conducive to maintaining the well-being of elephants has been considered. Each of the features observed in captivity has been rated on a scale ranging from zero to the maximum provided by experts. In order to give an idea of the captive condition in its entirety, rating across all observed parameters across all the individuals has been considered together for each management regime.

A predominant feature of both regimes was work: its all-encompassing aspect for TrvBg elephants and its absence for FD/Zoo elephants. The work schedule, the period for which the animals were worked, determined most aspects of living for TrvBg elephants: water/food/rest/shade/interaction

with conspecifics. This was compounded by absence of any shelter exclusive to the working animals when 'off-duty'. FD/Zoo elephants were maintained in restricted, but near natural conditions with access to vegetation. Their numbers were low and were chained at night, thus adding to constrained interactions among the individuals. Most veterinary routines such as vaccination/weight measurement/testing samples of urine/dung/blood were not practised.

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Section 2:
Captive elephants of Kankaria Zoo and Gujarat Ecological Education and Research (GEER) Foundation of Gujarat

Executive Summary

Four elephants maintained by two institutions, reside in the state of Gujarat. Of these, two elephants belong to Sayaji Bagh zoo and two belong to a rescue centre, the GEER Foundation.

Welfare status of the elephants was measured by assessment of the living conditions of the elephants, inclusive of the physical, social, physiological and psychological conditions, in order to provide a measure of their welfare status.

Data of housing conditions, provision of food and water requirements, veterinary care and opportunity for expression of natural behaviours as seen in wild elephants was collected. Each of the observations was represented as a variable or sub-parameter. Each variable/sub-parameter was rated on a 0 – 10 scale for its suitability to the animal. 0 represented the worse possible situation and 10 was considered to be satisfactory.

Mean age of animal kept in the institution was 25 years and the mean rating for source of elephant is 2. Shelter consisted of mud flooring at both places. The rescue center was 8 – 10 acres in size. Mean rating for shelter-related parameter was 6, with 86% of all the rating getting a score less than 6.

Access to a perennial source of running water in form the of river, pond or tank was available as water source and mean rating was 8.1, implying occurrence of satisfactory conditions of water availability and use.

All the animals were allowed to walk; two elephants were walked to a nearby forest to forage within. This was done in the morning and evening and mean rating for walking was 10.

All the elephants had opportunity for day-long social interaction. This feature was rated across five sub-parameters and the mean rating was 5 with 80% of all the values getting a rating less than 6.

Elephants belonging to the Geer Foundation were allowed to range free for four hours per day in a nearby forest and the rescue centre elephants were not allowed to free range. Mean rating was 3, pointing towards poor welfare conditions. None of the elephants were made to work/perform for public audience and the mean rating was 10.

Both stall feed and browsing/grazing by the elephants was practised; stall feed included sugarcane (S*accharum* sp.), green grass and hay. Mean rating was 8 indicating satisfactory status for food provisioning.

Musth was reported for both male elephants and all the animals were exposed to elephants of the opposite sex. Mean rating for reproductive status was 6 implying occurrence of moderate conditions for this feature.

Wounds from chaining for one female elephant and watery eyes for one male elephant (which was a regular feature of the animal) were reported; the mean rating for health-related parameter was 3.

All the elephants had access to a veterinary doctor. Rating was 6, with 75% of all values getting a rating of 5.

The overall rating for elephants was 7, with 50% of all the values getting a rating less than 6. This rating indicates existence of moderate welfare conditions for the observed elephants.

Introduction

Maintenance of elephants in captive conditions by the state or by rescue centre entails that optimum environment is provided for these animals, keeping the welfare of the animal an issue of the highest priority. Four elephants, maintained by two institutions, reside in the state of Gujarat. Of these, two elephants belong to Kankaria Zoo and two belong to a rescue centre, the GEER Foundation.

Objective

- Assessing welfare status of captive elephants in these two locations by studying the living conditions— physical/ social/ physiological and psychological— of the elephants in terms of their suitability to the elephants
- Assessing the professional experience and socio-economic status of handlers (mahouts/ assistants or cawadis)

Method

Data was collected through observation and interviews with mahout/management regarding such aspects as housing conditions, provision of everyday food and water requirements, veterinary care and opportunity for expression of natural behaviours as seen in wild elephants. Each of these features was represented as a variable or sub-parameter. Each variable/sub-parameter was rated on a 0 – 10 scale for its suitability to the animal. 0 represented the worse possible situation and 10 was considered to be satisfactory. The suitability of a sub-parameter depended on the replication of near natural conditions for the animal, i.e., any feature which provided conditions experienced by the animal its wild state was given a rating of 10.

Ratings were graded in the following manner:

- 0 – 2.4: Bad welfare conditions
- 2.5 – 4.9: Poor
- 5.0 – 7.4: Moderate
- 7.5 – 10.0: Satisfactory

Some variables have been clubbed together to represent the overall conditions for that parameter. For instance, the parameter shelter includes sub-parameters such as shelter type, size, flooring, closed or open type, duration the animal is kept within, maintenance of hygiene and materials used. Each sub-parameter is given a mean rating calculated across the observed number of individuals. The mean sub-parametric values are then considered together to give an overall mean for the parameter.

Result

Population Status

Of the four, two elephants – a female (20 years) and a male (25 years) belonged to the GEER Foundation of the state Forest department. The remaining two animals (one female, 25 yrs., and one male, 30 yrs.) belonged to the Kankaria Zoo. Mean age was 25 (SE = 2.04, N = 4) years (the ages of individual elephants are approximate).

Source of elephants

Clubb and Mason (2002) cite several authors who state that transfer of elephants across different owners/management systems may result in stress due to breakage of established social relationships and or introduction of new and unknown animals into a group. Hence, low ratings have been given.

- Both GEER elephants were had been obtained from a circus
- The Zoo elephants had been purchased (source unknown)

Mean rating was 2.0 (SE = 0, N = 4).

Shelter

- Shelter consisted of mud flooring at both places. The rescue center was 8 – 10 acres in size.
- Hygiene of the shelter was described as good.

The housing conditions provided was rated across seven sub-parameters. Mean rating was 5.7 (SE = 0.71, N= 7, henceforth *N* refers to number of sub-parameters*) with 86% of all the ratings getting a score less than 6 (Figure 1).

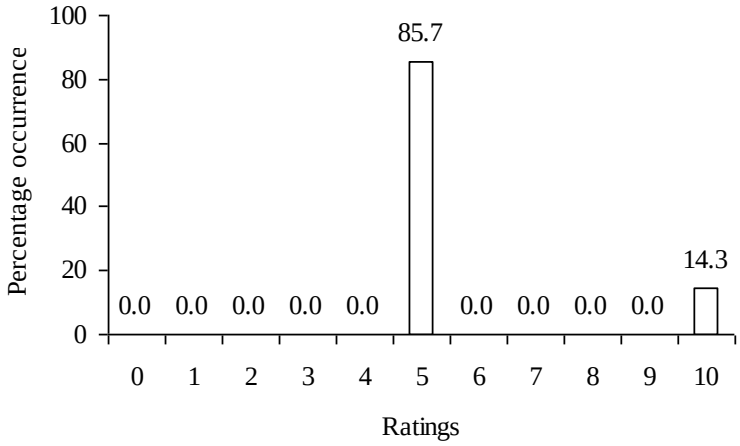
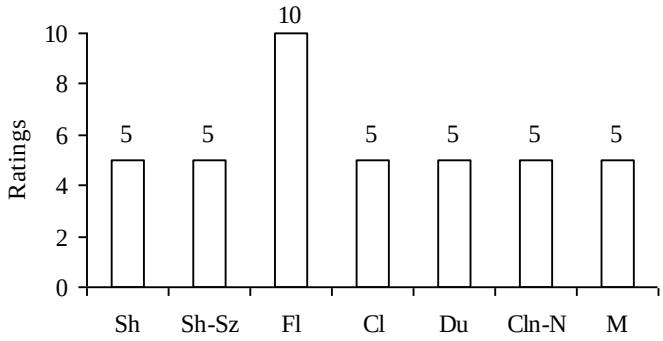


Figure 1: Percentage occurrence of ratings for shelter

Elephants kept in natural forest conditions and allowed to range free are given high rating. Any deviation from this state gets a corresponding lower rating. Mean rating was 5.0 (SE = 0.0, N = 4). Small size of shelters is given low rating, considering the range covered by elephants in the wild. Rating was 5.0 (SE = 0.0, N = 4). Elephants housed with natural/earthen flooring have been given higher ratings (Figure 2). Rating was 10.0 (SE = 0.0, N = 4). Accumulation of dung and urine near an animal's tethering site leads to associated diseases for the animal. Mean rating was 5.0 (SE = 0.0, N = 4).



Sh: Shelter type
Clt: Type of closed enclosure
Sh-Sz: Shelter size
Du: Duration animal kept in enclosure
Fl: Floor type
Cl-N: No. of times cleaned-day or week
M: Materials used for cleaning

Figure 2: Ratings for shelter sub-parameters

Water availability

- There was access to perennial source of running water (river) in both places
- Pond/tanks were also available as water source.
- Distance to water source ranged from 100 meters to zero meters.
- The elephants were said to drink 3 to 4 times/day.
- Bathing frequency was twice per day in a river.
- Bath duration was two hours.

Availability and access to water, for drinking and bathing, is an important part of an elephant's life. Under captive conditions, water may not always be accessible when the animal needs it. This parameter was rated using nine sub-parameters (Figure 3), mean rating was 8.1 (SE = 1.2, N = 9) implying occurrence of satisfactory conditions of water availability and use.

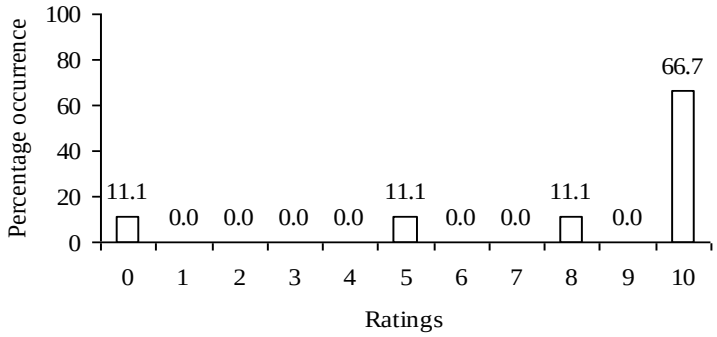
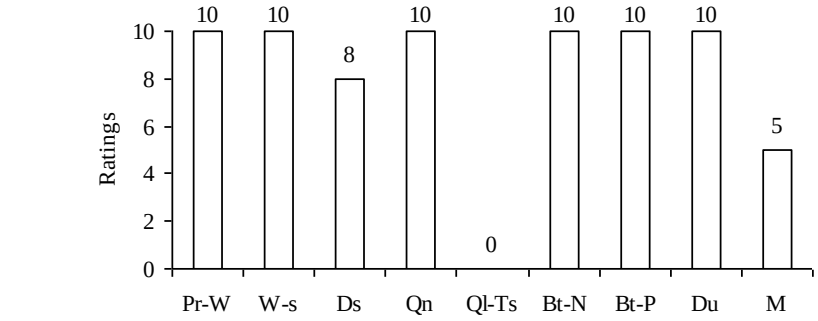


Figure 3: Percentage occurrence of ratings for water

Access to running water throughout the year was given high rating as such sources are comparatively free of contamination as opposed to stagnant water. Rating was 10.0 (SE = 0.0, N = 4). Water sources which were easily accessible to the animals when needed were given higher rating. Mean rating was 10.0 (SE = 0.0, N = 4). Provision of bathing at least twice a day was given high rating. Mean rating was 10.0 (SE = 0.0, N = 4). Use of hard, abrasive materials as a scrub

while bathing elephants was given lower rating (Figure 4) and the mean rating was 5.0 (SE = 0.0, N = 4).



Pr-W: Perennial source of running water
W-s: Water source
Ds: Distance to water
Qn: Quantity of water intake/ day
Ql-Ts: Water quality tests
Bt-N: Number of times bathing
Bt-P: Bathing place
Du: Duration of bath
M: Bathing materials used

Figure 4: Ratings for water sub-parameters

Rest and sleep

- The animals were not made to work. Hence, opportunity for rest depended on the elephant's choice
- All the animals were allowed to sleep within the shelter premises
- The animals were restrained with a five metre chain while sleeping

This parameter was rated considering duration of rest/ sleep, place and size of sleeping area (Figure 5). Mean rating was 8.6 (SE = 0.92, N= 7).

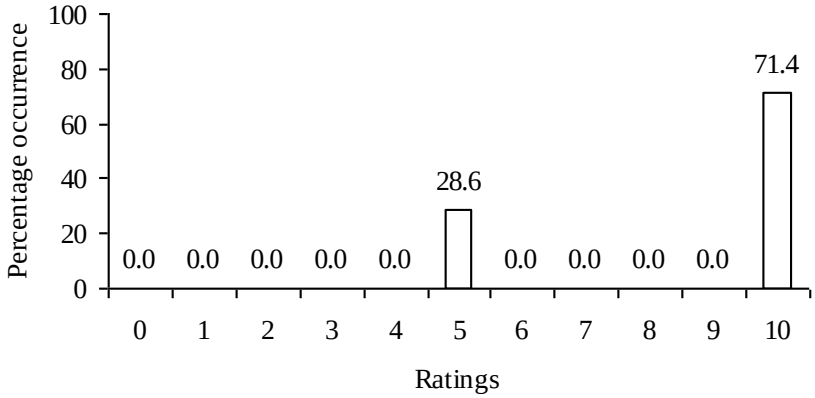


Figure 5: Percentage occurrence of ratings for rest and sleep

All the observed elephants were allowed to rest and not given any work (Figure 6). Rating was 10.0 (SE = 0.0, N = 4). The resting place was similar to the shelter. Rating was 10.0 (SE = 0.0, N = 4). The elephants were restricted with a five meter chain at night, hence sleeping area was limited. Rating was 5.0 (SE = 0.0, N = 4).

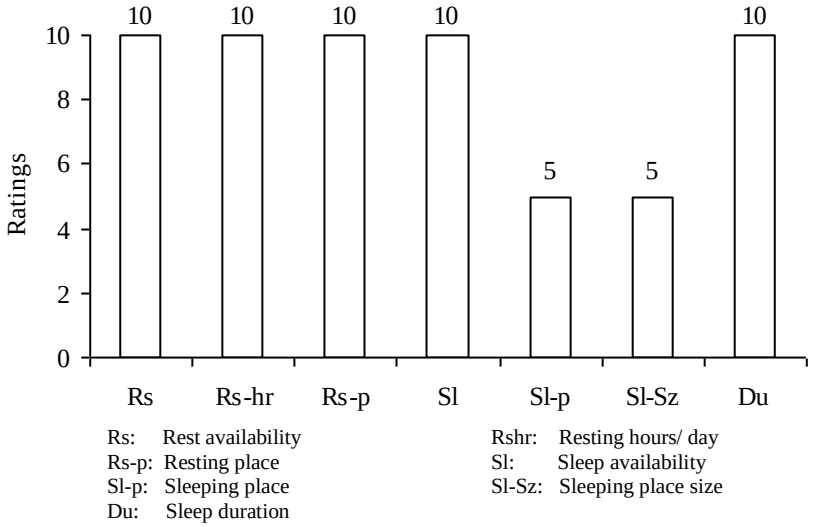


Figure 6: Ratings for Rest & Sleep sub-parameters

Opportunity for exercise (walk)

- All the animals were walked.
- Two elephants were walked to a nearby forest to forage within. This was done in the morning and evening. Nature of terrain was mud.
- Distance covered was 4 – 5 km.

Female Asian elephants have been recorded to range over 30 – 800 km^2 while males may range upto 200 km^2 (Sukumar, 2003). Confined space due to chaining or lack of physical space implies need for suitable opportunity for walking. Mean rating was 10.0 (SE = 0.0, N = 6) indicating occurrence of satisfactory conditions (Figure 7).

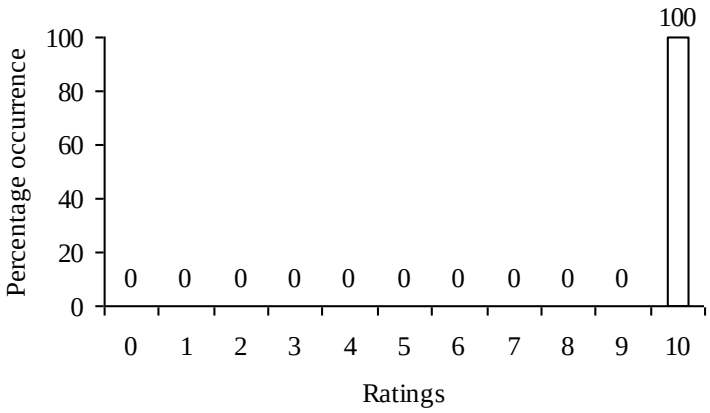
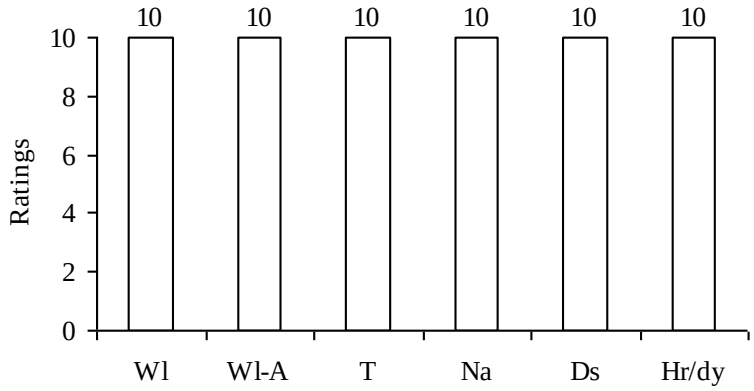


Figure 7: Percentage occurrence of ratings for walk

All the observed elephants were walked to a nearby forest. Rating was 10.0 (SE = 0.0, N = 4). The elephants were reported to be walked on earthen/natural surfaces (Figure 8). Rating was 10.0 (SE = 0.0, N = 4).



Wl: Allowed to walk
Wl-A: Area of walking
T: Time of walking
Na: Nature of terrain
Ds: Distance covered
Hr/dy: Hours/day during walking

Figure 8: Ratings for walk sub-parameters

Social interaction

- All the elephants had opportunity for social interaction.
- Interaction hours were throughout the day.
- Each elephant had one member of the opposite sex for interaction.
- Distance between the animals was zero.

Female elephants live in maternal groups where several individuals of different ages interact (Schulte, 2000). Young male elephants too live within such groups until they become independent. Captivity forces restrictions on the expression of choices by the elephants regarding interaction with others. This feature was rated across five sub-parameters. The mean rating was 4.8 (SE = 1.5, N = 5) with 80% of all the values getting a rating less than 6 (Figure 9).

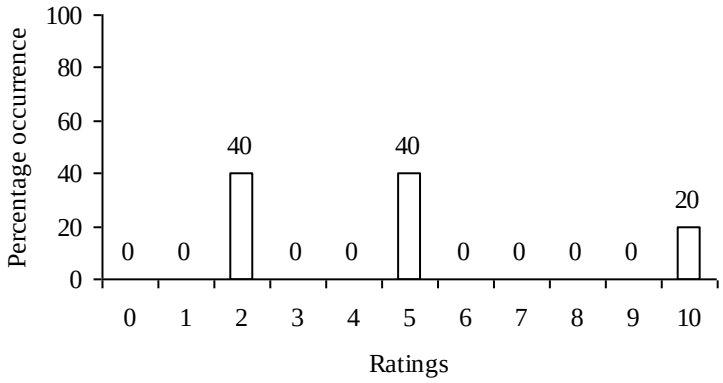


Figure 9: Percentage occurrence of ratings for social interaction

All the observed animals were allowed to interact. Rating was 10.0 (SE = 0.0, N = 4). When elephants were allowed to interact under free ranging conditions, a high rating was given. Rating was 5.0 (SE = 0.0, N = 4) implying occurrence of moderate conditions. Group sizes that replicate natural herd structures were given high rating. Rating was 2.0 (SE = 0.0, N = 4) indicating of poor conditions for the group size (Figure 10).

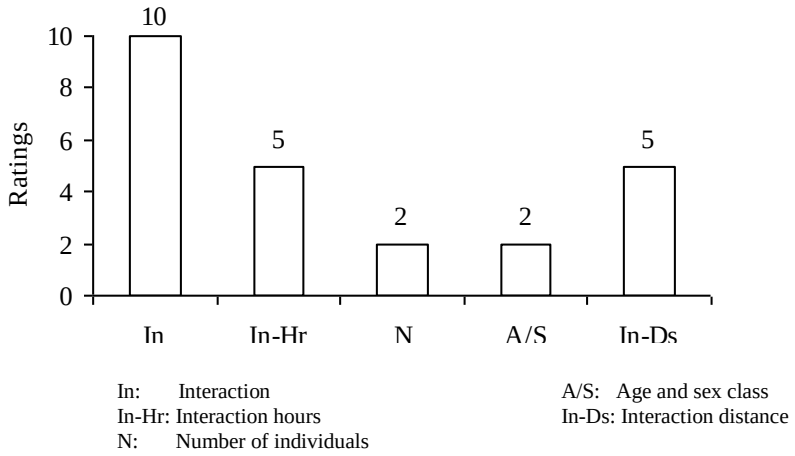


Figure 10: Ratings for social interaction sub-parameters

Chaining

- Elephants belonging to the GEER Foundation were allowed to range free for four hours per day at a nearby forest.
- The rescue centre elephants were not allowed to free range.
- All the animals were chained for 12 hours with a five metre chain during night.

Captive elephants are generally chained to control their movement as it is an easy way of handling the animals. Improper fixing of chains or continuous chaining of the same region of the elephant's body may result in abrasion-induced injury to the animal (Kurt and Garai, 2007). Mean rating was 2.9 (SE = 1.3, N = 4) which is an indication of poor welfare conditions (Figure 11).

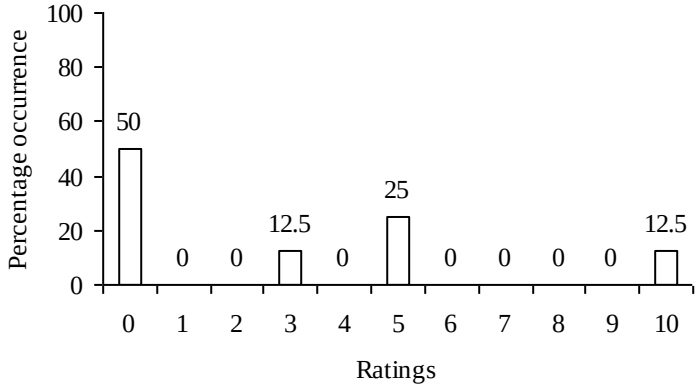


Figure 11: Percentage occurrence of ratings for chaining

Two of the elephants were allowed to range free during the day. Mean rating was 5.0 (SE = 2.9, N = 4). All the animals were chained for an average of 12 hours (Figure 12). Mean rating was 0.0 (SE = 0.0, N = 4).

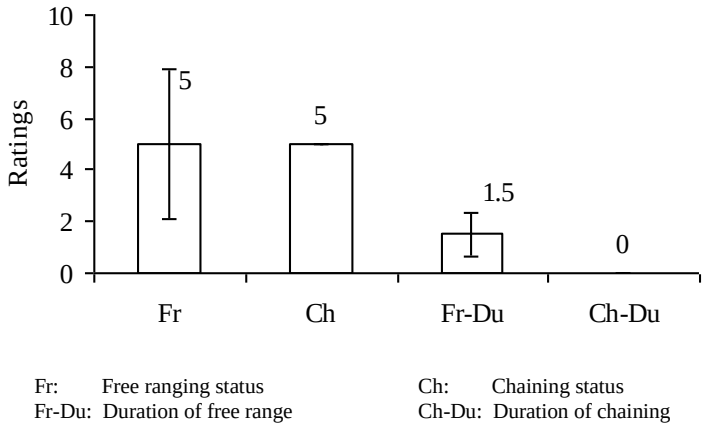


Figure 12: Ratings for chain sub-parameters

Behaviour

- All the elephants were described as quiet.
- Three elephants had not caused any injury/death of people. However, a twenty year old male at the rescue center, had been aggressive towards people.
- Except the 20 yr old male elephant, none of the animals exhibited stereotypic behaviour.

Imposition of a captive and alien environment may express itself in terms of abnormal behavior among the animals. The temperament of the animal is also an indication of the ease with which the elephant can be handled. Overall mean rating was 8.1 (SE = 0.7, N = 4) indicating satisfactory conditions for the observed sub-parameters (Figure 13).

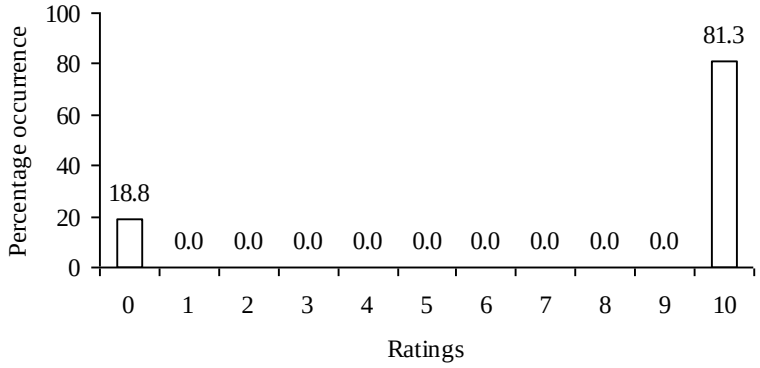
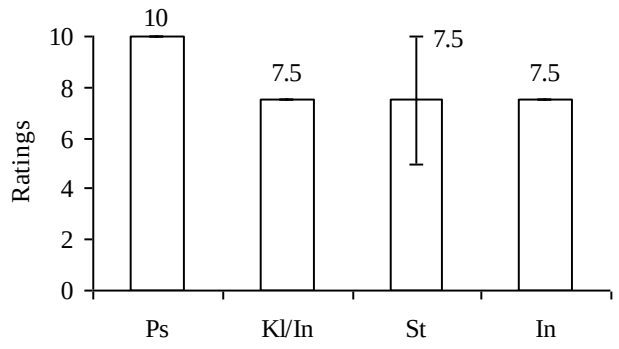


Figure 13: Percentage occurrence of ratings for behaviour

Elephants that were calm/quiet were given high rating as this could be an indication of being comfortable with the environment. However, this temperament could also be a pointer to existence of abnormal behaviour in the form of apathy to its surroundings. Rating was 10.0 (SE = 0.0, N = 4). Stereotypy (Figure 14) is considered to be an indicator of abnormal behaviour. Rating was 7.5 (SE = 2.5, N = 4).



Ps: Personality Kl/In: Incidents of killing/injuring people
St: Occurrence of stereotypic behaviour In: Intensity of stereotypy

Figure 14: Ratings for behaviour sub-parameters

Work

- None of the elephants were made to work or perform for public audience.

Work type defines what the elephant does as part of its daily routine. Any work alien to the animal's natural behaviour has been given lower rating. Mean rating was 10.0 (SE = 0.0, N = 2) as the observed animals were not made to perform any work.

Provision of food

- Both stall feed and browsing/grazing by the elephants was practised.
- Stall feed included sugarcane (S*accharum* sp.), green grass and hay.

Elephants which are allowed to graze/browse under natural conditions along with a provision of supplements have been given high rating. Mean rating was 7.8 (SE = 1.3, N = 4) indicating satisfactory status for food provisioning (Figure 15).

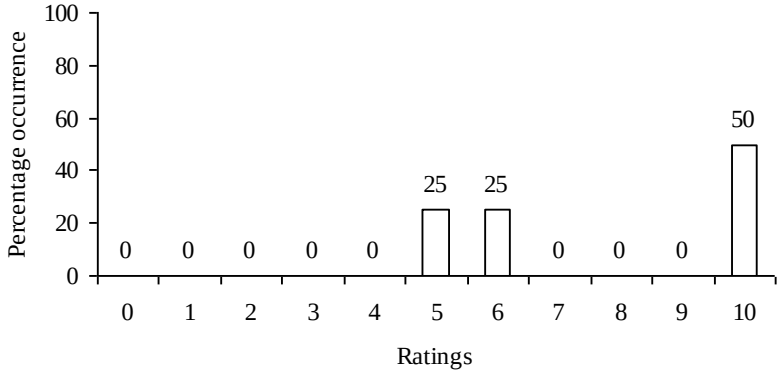


Figure 15: Percentage occurrence of ratings for Food

Elephants were reported to obtain feed from both stall feed and free-ranging for foraging. Hence, rating was 10.0 (SE = 0.0, N = 4). Low ratings show (Figure 16) unsuitability in

terms of chances of contamination, accessibility to food for the animal and absence of appropriate physical environment while feeding. Mean rating was 5.0 (SE = 0.0, N = 4).

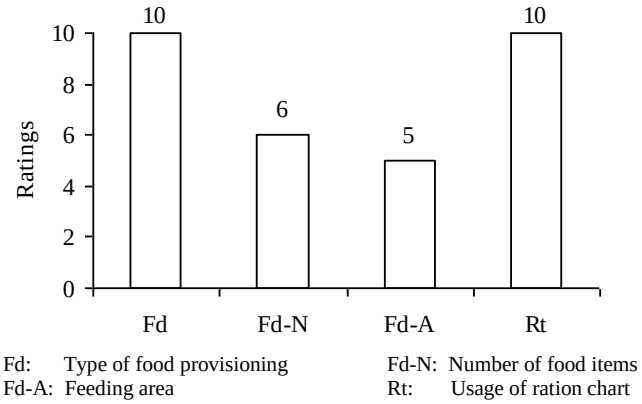


Figure 16: Ratings for food sub-parameters

Reproductive status

- Musth was reported for both male elephants.
- All the animals were exposed to elephants of the opposite sex.
- Mating source for the female was captive male.
- There were no successful matings reported for any of the elephants.

Reproductive status was rated in terms of occurrence of oestrus/musth, exposure to males, factors related to pregnancy and birth/siring of offspring. Mean rating was 5.8 (SE = 2.0, N = 6) implying occurrence of moderate conditions for this feature (Figure 17).

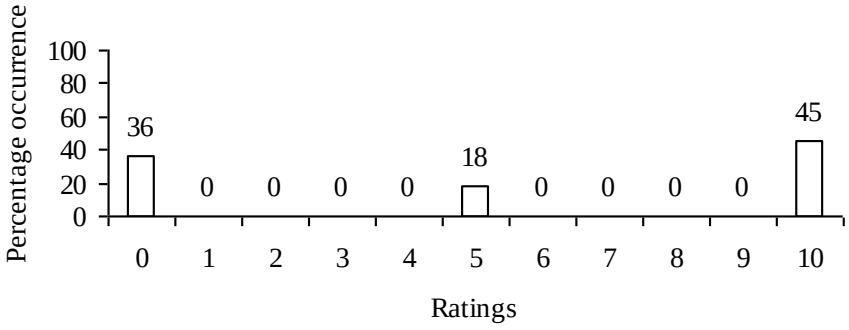


Figure 17: Percentage occurrence of ratings for reproductive status

Data for females was not available. However, both males were said to be in musth. Rating was 10.0. The observed elephants were maintained in each institution as a pair: a male and a female. Hence, rating was 10.0 (SE = 0.0, N = 4). None of the elephants had given birth or sired any offspring (Figure 18) despite being allowed to mate. Rating was 0.0 (SE = 0.0, N = 4).

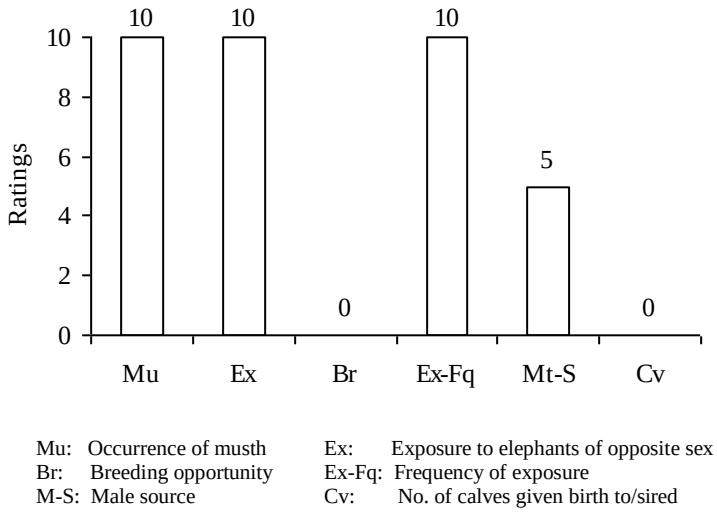


Figure 18: Ratings for reproductive status sub-parameters

Health status

- Wounds from chaining were reported for the twenty year old female at the GEER Foundation, the male elephant foot problems at the same location. Frequency was said to be rare.
- Male elephant at the rescue centre was said to have watery eyes which was a regular feature of the animal.
- No blood/urine/dung sample tests were done for any of the elephants.
- Body measurements had not been taken.

Ill-health is considered to be an indicator of poor welfare conditions (Clubb and Mason, 2002). This parameter was rated using several sub-parameters (Figure 19) such as frequency of disease/injury, tests of blood/urine or dung and measuring morphometric aspects of the animal. Mean rating was 2.5 (SE = 1.4, N = 4) indicating poor health conditions.

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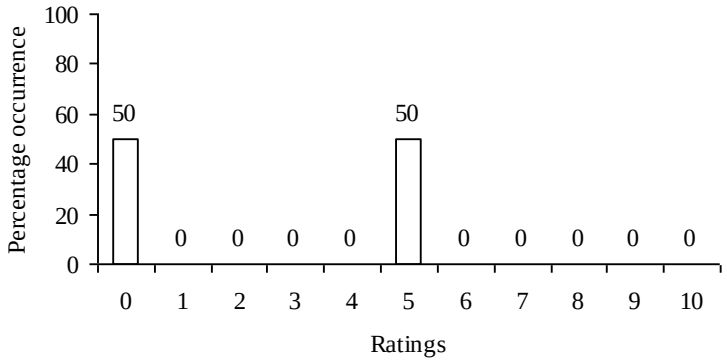

Figure 19: Percentage occurrence of ratings for health status

Occurrence of disease/injury was rated considering the extent of pain/its effect on further ill-health of the animal. Rating was 5.0 (SE = 0.0, N = 4). No tests were conducted on samples from the animals (Figure 20). Hence, the rating was 0.0 (SE = 0.0, N = 4).

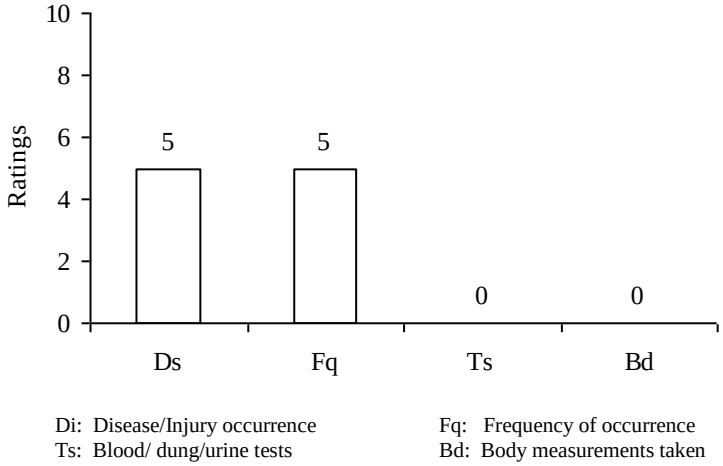

Figure 20: Ratings for health sub-parameters

Veterinary care

- All the elephants had access to a veterinary doctor.
- The GEER foundation doctor did not have any experience in treating elephants and was available only on call.
- The Rescue centre doctor had 10 years, experience in treating elephants and was available daily.
- All the doctors had treated other wildlife.
- There was no veterinary care facility for any of the animals.

Maintenance of elephants in a facility makes it mandatory for veterinary care to be available. Rating was 6.3 (SE = 1.3, N = 4) with 75% of all values getting a rating of five (Figure 21).

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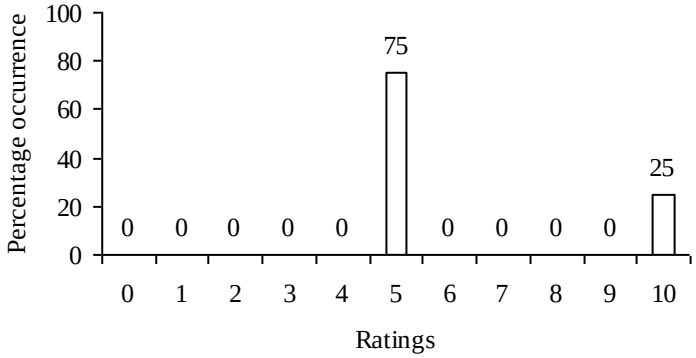
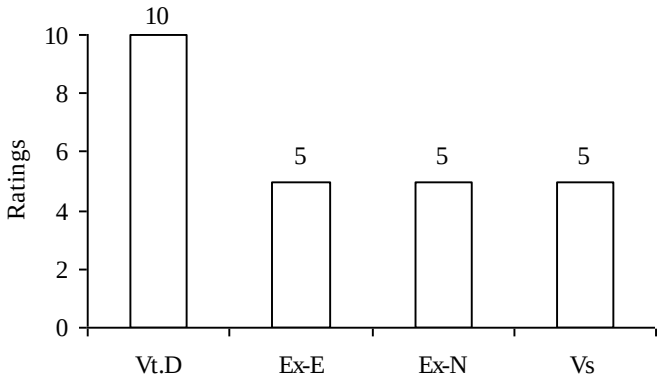


Figure 21: Figure Percentage occurrence of ratings for veterinary care

Availability of doctors with facility was given high rating. Rating was 10.0 (SE = 0.0, N = 4) indicating availability of doctors. Doctors with experience in treating elephants were given high rating. Rating was 5.0 (SE = 0.0, N = 4).



Vt-D: Availability of Veterinary doctor Ex-E: Experience in treating elephants
Ex-N: Number of years treating elephants Vs: Frequency of doctor's visits

Figure 22: Ratings for veterinary care sub-parameters

Record maintenance

- Records were maintained at both locations.

Records for sub-parameters such as clinical/service/any other type and its maintenance indicate care taken by a management in the upkeep of the facility. It also aids in managing resources. Mean rating was 5.0 (SE = 0.0, N = 2) showing that both sub-parameters were given a rating of 5.0.

Experience and socio-economic status of handlers (mahouts/ cawadi)

There were three handlers: one handler for the two elephants of GEER foundation and one each for the elephants of the Zoo.

- Experience with a specific elephant ranged from 10-15y
- All handlers had been trained on the job
- All used tool to control their elephant: tool type was the stick
- Annual salary ranged from Rs.60,000 to 70,000/-
- Number of children/ family ranged from 2-3
- Insurance cover was not available for any
- All were reported to consume alcohol

Rating for professional experience was 8.2 (SE= 0.6, N=1) while the rating for socio-economic status was 3.3 (SE= 2.5, N= 4).

Overall ratings

Overall ratings for elephants, when considered across all individual values, irrespective of parameters, was 6.7 (SE = 0.22, N** = 258, *N** refers to number of individual rating across all the elephants observed*) with 50 % of all the values getting a rating less than 6 (Figure 23).

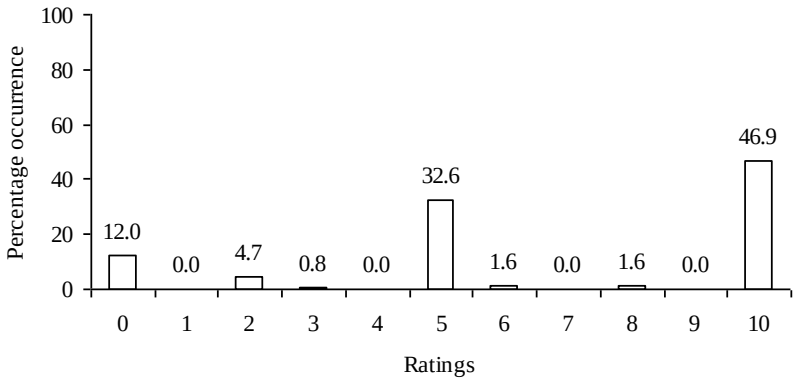


Figure 23: Percentage occurrence of ratings across all parameters

Discussion

The overall rating for elephants was 7 with 50% of all the values getting a rating less than 6. This rating indicates moderate welfare conditions for the observed elephants. One feature of the data was the occurrence and use of sub-parameters with only two types of values: 0 or 10. Such "Yes-No" type of sub-parameters formed 24.6 % of the data. Of this, 67.5% were 10 (Yes) scores which were 16.7% of the overall data. The occurrence of score 10 shows the existence of a suitable sub-parameter for the elephant. However, detailed insights using related sub-parameters may not be given such high rating as they were not the "Yes-No" types. Thus, the occurrence of nearly 17% having score 10 could add to the overall rating of the elephants.

Rating above 7.5 has been considered to indicate satisfactory welfare conditions. Some of the parameters which were in this category were:

- Water: Asian elephants are reported to drink water at least once a day (Shoshani and Eisenberg, 1982). Hence, provision of and access to suitable water sources is important. There was provision of running water in the form of a river, close to the elephant's location, and the animals were reported to be drinking.
- Rest and sleep: Kurt and Garai (2007) state that wild adult elephants rest during the hottest parts of a day and sleep at night. This parameter was given high rating as none of the observed animals were made to work, allowing the animals to rest or sleep.
- Walk: All the observed elephants were walked to a nearby forest or within the enclosure on natural terrain.
- Observed behavior: The observed elephants were all described as quiet. However, only one elephant, a 30 year old male was said to have exhibited aggression towards people in one incident. This elephant was also said to exhibit stereotypic behaviour.
- Food provisioning: The animals were given stall feed and also allowed to range free for foraging.

However, these animals were not provided *all* the necessary conditions needed for an elephant in captivity.

- Poole and Granli (2005) state, keeping the knowledge gained from studies of wild African elephants as a reference, that a captive environment should ensure that the elephant's needs are met. They highlight that captive environments should, among other important aspects, enable an elephant to be able to choose social partners, remain unchained and have their preferred social companions during parturition. As the social behaviour of both Asian and African elephants are comparable (Kurt and Garai, 2007), the insight by Poole and Granli can be applied to captive Asian elephants also.

  The observed elephants, in the two institutions in Gujarat, were part of a very restricted group size – limited to only two animals, a male and a female, in each case. This represents a deviation from the group size seen among wild elephants where related adult females and their offspring form a social grouping (Schulte, 2000).

  Kurt and Garai (2007) state that learning forms an integral part of elephant society; mothering, allomothering, leadership, etc. for females, and successfully siring offspring for males, form an important part in an elephant's life. Thus, the presence of pairs of elephants of opposite sex does not ensure the expression of normal behaviour by the animals. This may also be a likely cause for the elephants, to not having produced any offspring.
- All the elephants were said to be chained for 12 hours at night. Kurt and Garai (2007) point out the disadvantages of chaining elephants: improper fixing or constant chaining of the same region can lead to injury due to abrasive action. Gruber et al. (2000) report incidence of stereotypy among chained elephants.
- Tests on blood/dung/urine for biochemical parameters of body condition had not been conducted.
- Immunization was not practiced, application of oil on the elephant's body was not done
- Body measurements were not taken for the elephants. Such measurements give an indication of growth and any deviations from the normal.
- Availability of experienced doctors was limited to the zoo only; such doctors are needed wherever elephants are maintained.
- Provision of insurance cover was needed for all the handlers, the practice of alcohol consumption was also uniform across the institutions
- Periodic training for the handlers was needed as they had all learnt their profession on the job

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Section 3:
Begging, Blessing and Traveling Elephants

Executive summary

The maintenance of wild animals beyond their natural range areas may involve exposing the animals to an unsuitable environment.

Twenty-one elephants belonging to three temples – Jaganathpur temple at Ahmedabad, Hanuman temple at Baroda and Suraj Ramji Mandir at Surat in the state of Gujarat, were assessed for their welfare status.

Welfare status of these elephants in captivity was evaluated by collecting data using 86 parameters that includes physical aspects of the living environment, social and behavioural profile, and physiological status as well as aspects of management related to feeding, working conditions and provision of infrastructure.

Ratings were graded in the following manner:

- 0 – 2.4 :Bad welfare conditions
- 2.5 – 4.9 :Poor
- 5.0 – 7.4 :Moderate
- 7.5 –10.0 :Satisfactory

All the animals were housed within the temple premises. Physical conditions of housing provided to the animals were rated across seven sub-parameters. Overall mean rating was 1.3 with 86% of the score being less than three.

Mean rating for shelter was 0.0 showing lack of space for these animals. Animals were exposed to hard surfaces and low rating reflects this situation. Accumulation of dung and urine near an animal's tethering site leads to associated diseases. Mean rating for the parameter related to overall hygiene was 2.0.

There was no access to perennial source of running water. Drinking water source was taps/buckets/ponds or any source available at location while working. Bathing was not frequent, due to the constant move from place to place demanded by their work schedule. Overall rating was 1.4 with 89% of all the ratings getting scores less than four.

The animals were rarely provided rest. Rest depended on the work schedule or on the ability of the mahout to gauge if the animal was tired. Resting hours/day and places for resting were random; the animals slept at random locations if they were not near the temple, and were tied with one meter chain while sleeping.

All animals walk as they move from one place to another as part of their work. Animals would walk was from 7 a.m. to 11 p.m. covering a distance of 20 – 60 km. At times, they had to cover 300 km over a period of four days, mostly on tar roads.

Overall mean rating was 3.0 with 83% of the ratings occurring in the bad – poor category.

Normal rectal temperature of an elephants is 35.9 °C. The temperature of Gujarat state varies from a minimum of 24 °C to a maximum of 45 °C in summer and from a minimum of 12 °C to a maximum of 31 °C during winter. Summer temperatures can reach a maximum of 46 °C. During this period, the animals are walked over hot tar roads without any access to shade, water or rest.

Coupled with increased body temperatures during the day is the practice of enclosing the animals within closed structures at night, thereby preventing easy loss of body heat to the surrounding environment. Maintenance of elephants in states like Gujarat with high mean temperatures entails making extra efforts to provide suitable environment for the animals.

None of the animals were allowed to range free, and were chained for 8 – 12 hours with one meter chain during the night. Overall mean rating is 1.25 with 75% of all the ratings getting a value of zero.

Work type included blessing/begging, use in marriage functions and religious processions, travel all over Gujarat, used in parties and taking people and children for rides around a big lake in the city. No shade is available during work, even during the hottest parts of the day. Overall mean rating was 1.6 with 82% of all ratings getting a score less than three.

Stall feed was the only source of food; overall mean rating is 3.0 with 50% of all the values getting a rating less than three.

Abscesses and foot problems was common among the elephants. Some elephants had damaged eyes, 4 to 5 females were blind. One female whose left eye was damaged was fit only to walk around the temple area as blood was oozing from a wound, but was made to travel for begging and other work reasons all over the state. Overall mean for health status was 2.1 with 50% of all the animals getting a rating of zero.

Elephants were referred to a local veterinary doctor, who had no experience in treating elephants, and would visit only when called/when a problem was severe or depending on the owners' interest. Overall rating was 0.0 with absence of any facility and lack of any record (service/clinical/other records).

The overall mean for the elephants across all the 86 parameters was 2.3 with 71% of all the values getting a rating less than four. Significantly, only five percent of the observed sub-parameters showed variation. 95% of the values were uniform, even though the animals belonged to different owners.

Introduction
Different figures are quoted for the number of elephants in Gujarat: unofficially the number maybe around 100. This survey came across twenty-five elephants maintained by temples/ private owners and the forest department. The ownership status of elephants belonging to temple / private owners is tenuous: temple elephants are leased out to private owners or private elephants are allowed to be kept in temples. Elephants are used by private owners as begging animals; they are also used for rides around Kankaria Lake at Ahmedabad.

Objective
The major objective of the investigation was

- To assess the welfare status of elephants being maintained by several temples in the state of Gujarat by documenting living conditions encompassing physical, social and health status of the animals.
- Assessment of the welfare status of the elephant handlers through a series of socio-economic variables as also their experience in handling elephants.

Method
Welfare of the captive elephants was evaluated by collecting data on the physical aspects of its living environment, its social and behavioural profile, physiological status, as well as aspects of management related to feeding, working conditions and provision of infrastructure. Data was collected through observations and interviews. Each of these features was represented as a variable or parameter. Each variable/parameter was rated on a 0 – 10 scale for its suitability to the animal. Zero represented the worse possible situation and ten was considered to be satisfactory. The suitability of a parameter depended on the replication of near natural conditions for the animal.

Ratings were graded in the following manner:

- 0 – 2.4 :Bad welfare conditions
- 2.5 – 4.9 :Poor
- 5.0 – 7.4 :Moderate
- 7.5 – 10.0 :Satisfactory

Some variables have been clubbed together to represent the overall condition for that parameter. For instance, the parameter shelter includes sub-parameters such as shelter type, size, flooring, closed or open type, duration the animal is kept within, maintenance of hygiene and materials used. Each sub-parameter is given a mean rating calculated across the observed number of individuals. The mean sub-parametric values are then considered together to give an overall mean for the parameter. Welfare status of the mahout was rated by studying his socio-economic profile. Information on experience in handling elephants was also recorded. The rating scale is the same as for the elephants. High ratings imply suitable social and economic conditions or satisfactory experience levels in handling elephants.

Result

Background

There are 21 Elephants in Gujarat with private owners/ temples:

- One female approx 30 years of age with Ramji Mandir, Surat.
- Two adult female elephants of above 30 years with Jaganathpur Temple Ahmedabad.
- Fifteen elephants (3 adult males and 12 adult females) owned by a private individual were allowed to be kept in Jaganathpur Temple. These elephants also independently begged, were used for rides around Kankaria Lake at Ahmedabad.
- Two female elephants were totally blind and one female was partially blind at the Hanuman temple. All of them live in a pathetic state and have no ownership certificate.

Twenty-one elephants belonging to three temples, Jaganathapur and Hanuman temple at Baroda and Suraj Ramji Mandir at Surat, in the state of Gujarat were assessed for their welfare status. Mean age was 34.1 yrs. (SE = 1.0, N = 21). Ages given for the observed animals are approximate. Of the eighteen females, age ranged from 25 – 40 yrs while the males ranged from 35 – 43 yrs.

Welfare status of the elephants was assessed using 86 sub-parameters. Ratings for various parameters are presented. Graphs have been presented depicting the percent distribution of rating from 0 to 10 for a parameter considering all the observed individuals. Ratings for sub-parameters have also been shown in graphs.

Source of elephant

All the observed elephants belonged to temples/ private owners in the state of Gujarat. Nineteen animals (91%) were said to have been purchased. Two elephants were obtained from circus companies. Elephants which have been purchased/transferred/exchanged across different owners have been given low rating, this implies change in the living conditions for the animal. Transfer between facilities implies breakage of established social relationships with other elephants (Kurt & Hartl, 1995)[†], transfer of young and growing animals might lead to stress (Clubb & Mason, 2002); all factors resulting in psychological distress of the animals with potential effects on physical health. Mean rating given was 2.0 (SE = 0.0, N = 21).

All the animals were housed within the temple premises.

- Seventeen elephants belonging to Jaganathpura temple in Baroda were housed in a closed type shelter, half the shelter had tin sheet roofing the other half had asbestos.
- Flooring for all the shelters was concrete.
- The elephants remained enclosed for eight hours/day.

Physical conditions of housing provided to the animals were rated across seven sub-parameters. Overall mean rating was 1.3 (SE = 0.71, N= 7) with 86% of the scores being less than three (Figure 1).

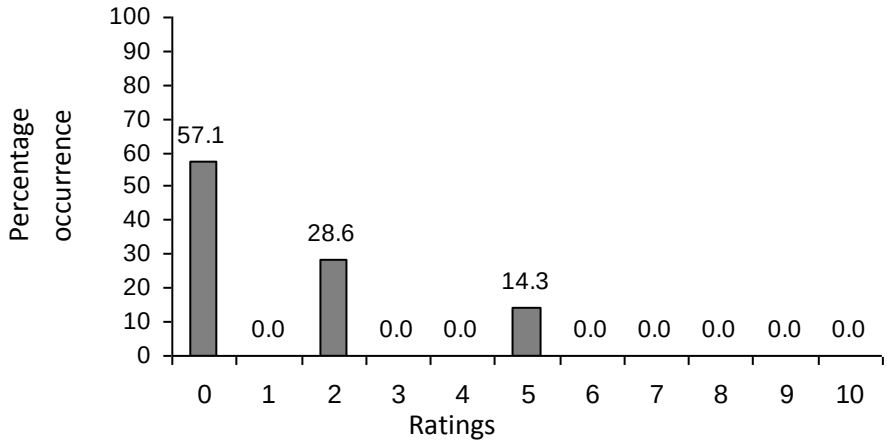
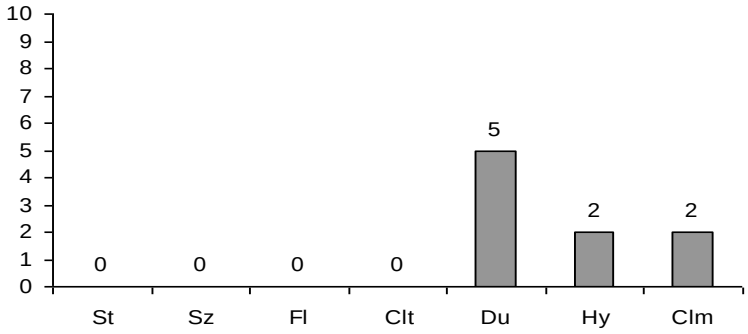


Figure 1: Percent occurrence of ratings for shelter

Elephants allowed to free-range under natural forest conditions were given high rating.. Mean rating was 0.0 (SE = 0.0, N = 21) with all the observed animals getting a value of zero, implying provision of improper and unsuitable shelters for the elephants. Providing at least 1% of the area available to wild elephants was considered to be satisfactory for captive animals. Mean rating was 0.0 (SE = 0.0, N = 21) showing lack of space for these animals.

Animals exposed to hard surfaces (Figure 2) have foot related problems and diseases (Benz, 2005) and low rating reflect this situation. Mean rating was 0.0 (SE = 0.0, N = 21). Accumulation of dung and urine near an animal's tethering site leads to associated diseases. Mean rating was 2.0 (SE = 0.0, N = 21).



St: Shelter type Sz: Shelter size
Fl: Floor type Clt: Type of closed enclosure
Du:Duration animal kept in enclosure Hy:Number of times shelter is cleaned
Clm: Cleaning materials

Figure 2: Ratings for shelter sub-parameters

Water

- There was no access to perennial source of running water.

- Drinking water source was taps/buckets/ponds and any source available at location while working.
- Drinking water source was nearby within the temple, but availability was random while working.
- The elephants were said to drink once per day.
- Bathing was not frequent, even though there was a pond within temple premises. This was because the animals were constantly moving from place to place due to their work schedule.
- Bathing place was at random locations depending upon where the animal was while working.
- Bath duration was 30 minutes.
- No scrubbing material was said to be used while bathing the animals.

Water is a very important requirement for elephants in terms of their need to maintain body temperature and sustain water intake. Thus, availability and access to proper water sources has been rated. Also, the procedures followed while bathing elephants has been assessed. Overall rating was 1.4 (SE = 0.6, N= 9) with 89% of all the ratings getting a score less than 4 (Figure 3).

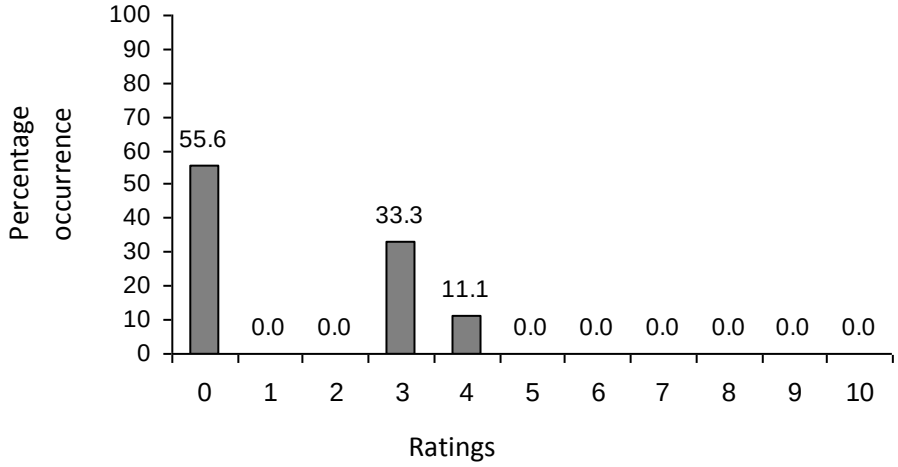
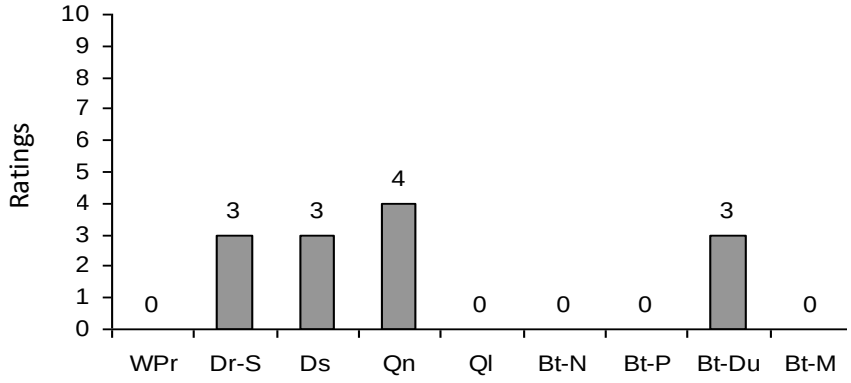


Figure 3: Percent occurrence of ratings for water

Access to running water throughout the year was given high rating. Running water reduces chances of contamination. Mean rating was 0.0 (SE = 0.0, N = 21). Ease of accessibility to the animal and provision of non-stagnant sources were features considered suitable for the elephant. Mean rating was 3.0 (SE = 0.0, N = 21) showing use of tap water which is not accessible to the animal when the need arises.

Elephants which are bathed at least once a day have been given high rating. Mean rating was 0.0 (SE = 0.0, N = 21) as all the observed animals were bathed infrequently (Figure 4). This is important for the elephant in terms of being able to express such behaviours as mud-wallowing and scratching against suitable landscape features, which help in maintaining

good skin condition (Kurt and Garai, 2007). Also, bathing animals in cramped spaces will add to unhygienic conditions. Mean rating was 0.0 (SE = 0.0, N = 21).



WPr: Perennial source of running water
Dr-S: Drinking water source
Qn: Quantity of water intake by elephants
Ql: Water quality tests
Bt-N: Number of times bathing
Bt-P: Bathing place
Bt-Du: Duration of bath
Bt-M: Bathing materials used

Figure 4: Ratings for water sub-parameters

Rest and sleep

- The animals were rarely provided rest, depending on the work schedule or on the ability of the mahout to gauge if the animal was tired.
- Resting hours/day and places for rest were random.
- All the animals were allowed to sleep within the temple or at random locations if they were not near the temple.
- The animals were tied with one metre chain while sleeping.
- Duration of sleep was three hours.

Wild elephants known to rest and sleep during different parts of a day (Kurt and Garai, 2007). These activities assume greater importance for captive elephants as they are subjected to a number of work related activities which may involve physical effort. Mean rating was 4.6 (SE = 1.4, N = 7) with 72% of all the values getting a rating less than 4 (Figure 5).

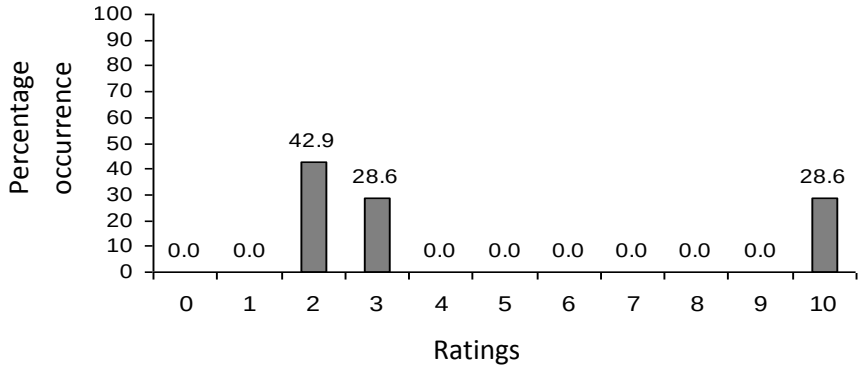
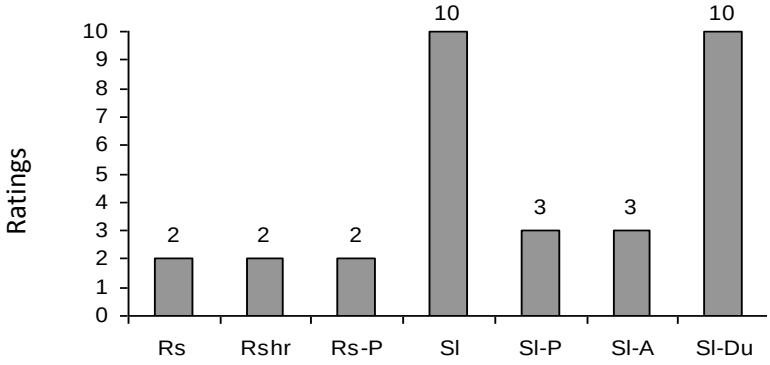


Figure 5: Percent occurrence of ratings for rest and sleep

The practice of allowing the animal to rest when they are tired or during certain parts of a day was given high rating. Mean rating was 2.0 (SE = 0.0, N = 21) showing irregular and infrequent resting opportunity. Duration of rest was given high rating if it provided sufficient resting period for the working animal. Mean rating was 2.0 (SE = 0.0, N = 21).

All the observed animals were allowed opportunity to sleep (Figure 6), hence rating was 10.0 (SE = 0.0, N = 21). Provision of suitable space and substrate for the animals while sleeping was given high ratings. Mean rating was 3.0 (SE = 0.0, N = 21) indicating occurrence of bad conditions.



Rs: Rest availability
Rshr: Resting hours/ day
Rs-P: Resting place
Sl: Sleep availability
Sl-P: Sleeping place
Sl-A: Sleeping place size
Sl-Du: Sleep duration

Figure 6: Ratings for Rest & Sleep sub-parameters

Opportunity for exercise

Walk

- All the animals were walked as they had to move from one place to another as part of their work.
- Walking hours was from 7 a.m. to 11 p.m. for a distance of 20 – 60 km. At times, they had to cover 300 km within a period of four days.
- The elephants were walked on tar roads.

Allowing captive elephants to walk among natural conditions replicates, to a certain extent, conditions experienced in the wild. The use of elephants for work does not ensure that the animals are allowed optimum exercise in the form of walking and in conditions suitable for expression of their natural behaviour. Overall mean rating was 3.0 (SE = 0.52, N = 6) with 83% of the ratings occurring in the bad – poor category (Figure 7).

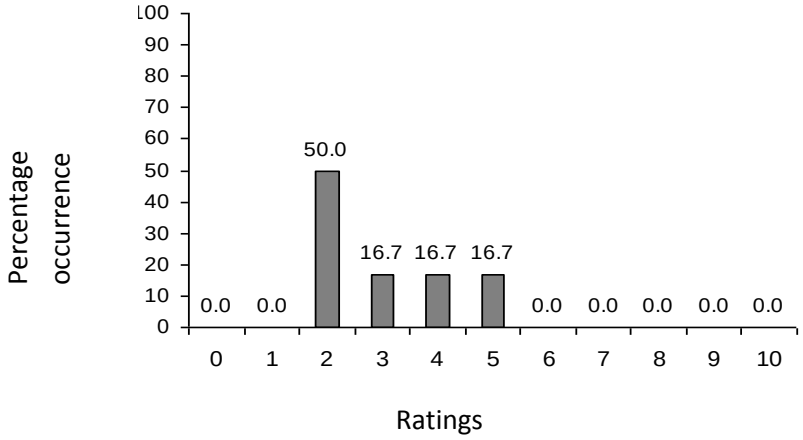
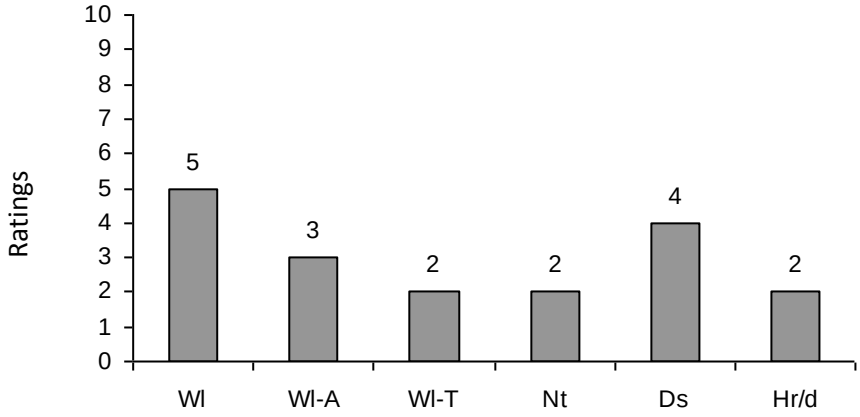


Figure 7: Percent occurrence of ratings for walk

All the elephants were said to be walked during the day (Figure 8). Mean rating was 5.0 (SE = 0.0, N = 21). Wild elephants are known to wander over vast areas. However, this activity is combined with periods of rest/sleep during hot parts of the day (Kurt and Garai, 2007). Mean rating was 2.0 (SE = 0.0, N = 21) pointing at bad conditions for time of the day when walked. Exposure to hard surfaces on a prolonged basis while walking results in foot related injuries. Mean rating was 2.0 (SE = 0.0, N = 21) as all the observed animals were said to be walked on tar roads.



Wl: Allowed to walk
Wl-A: Area of walking
Wl-T: Time of walking
Nt: Nature of terrain
Ds: Distance covered
Hr/d: Hours/day of walking

Figure 8: Ratings for walk sub-parameters

Social interaction

- 95% of the elephants (N = 21) were allowed social interaction. The lone elephant without access to this feature belonged to Suraj Ramji Mandir at Surat.
- Each elephant at Jaganathpura temple had access to sixteen other elephants which included adult females and three adult males. At Hanuman temple, each elephant had access to two other elephants, all of which were females.
- These elephants would be tied only at night within the shelter, when they were not working.
- All the animals were chained using one metre chain.

Allowing animals to interact among themselves is important as wild elephants are known for maintaining stable family groups involving diverse social behaviours (Vidya and Sukumar, 2005). Overall mean rating was 5.1 (SE = 1.1, N= 5) with 62% of all the values getting a rating less than 5 (Figure 9) indicating poor conditions for interaction.

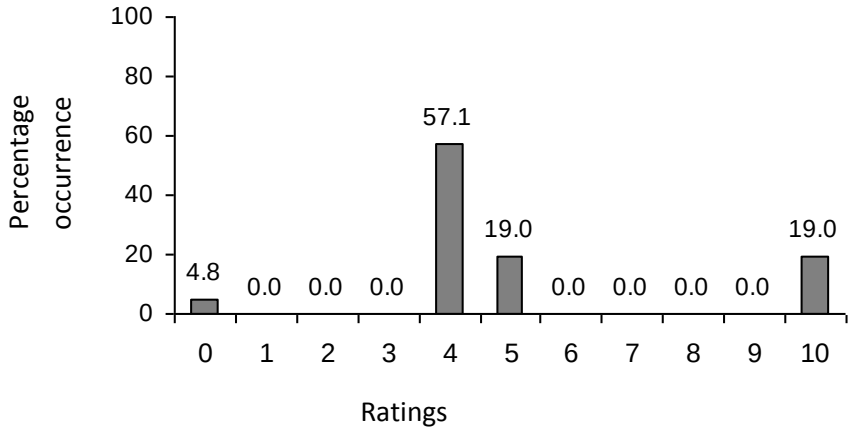
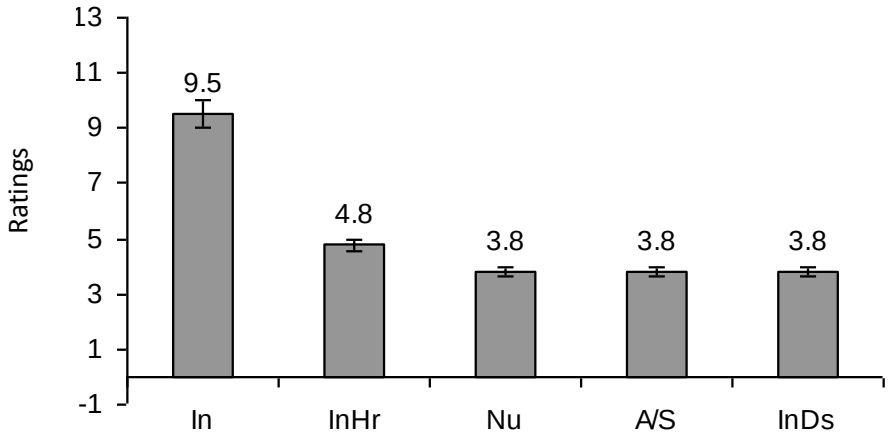


Figure 9: Percent occurrence of ratings for social interaction

High rating indicates occurrence of interaction amongst the animals. Mean rating was 9.5 (SE = 0.48, N=21) showing that 95% of the animals were given opportunity to interact. Duration for which interaction was allowed was rated. Rating was 4.8 (S.E. = 0.24, N = 21) implying existence of poor conditions.

The presence of other individuals does not ensure that interaction will take place as the animals are restricted in their movements by being chained (Figure 10). Mean rating was 3.8 (SE = 0.2, N = 21). The ability to touch and feel another within the shelter/enclosure has been given high rating. Mean rating was 3.8 (SE = 0.2, N = 21).



In: Interaction InHr: Interaction hours
Nu: Number of individuals A/S: Age and sex class
InDs: Interaction distance

Figure 10: Ratings for social interaction sub-parameters

Chaining

- None of the animals was allowed to range free.
- All the animals were chained for 8 – 12 hours with one metre chain during the night.

The use of chains to control captive elephants is almost universal. Chains not only impose restrictions on the movement of animals but also might cause injuries due to improper usage and chafing (Kurt and Garai, 2007). Overall mean rating was 1.25 (SE = 1.25, N = 4) with 75% of all the ratings getting a value of zero (Figure 11).

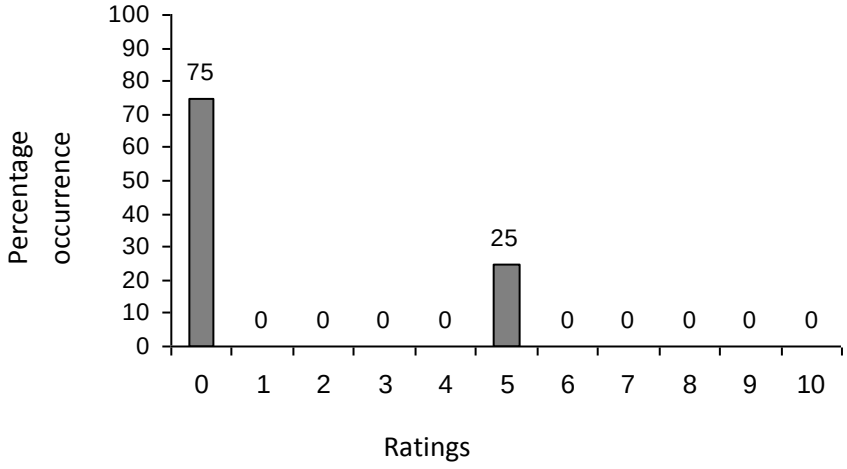
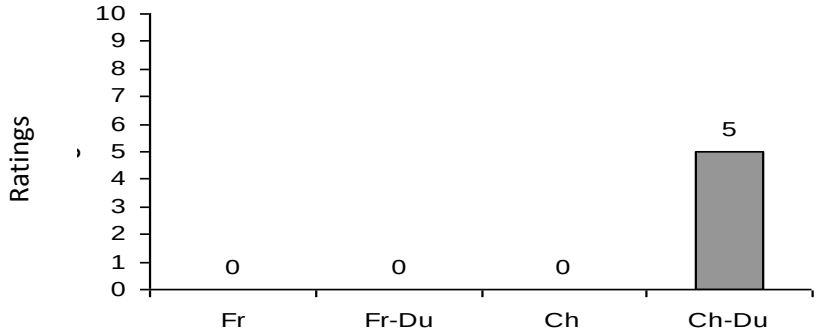


Figure 11: Percent occurrence of ratings for chaining

None of the observed animals was allowed to range free (Figure 12). Mean rating was 0.0 (SE = 0.0, N = 21). All the animals were chained for an average of 12 hours. Mean rating was 0.0 (SE = 0.0, N = 21).



Fr: Free ranging status
Fr-Du: Duration of free range
Ch: Chaining status
Ch-Du: Duration of chaining

Figure 12: Ratings for chain sub-parameters

Behaviour

- All the elephants were described as calm.
- There were no reports of injury or death to people caused by elephants.
- None of the animals exhibited stereotypic behaviour.

The observed behaviour of the animals was rated across several parameters to provide an indication of the ease of handling the animal and expression of abnormal behaviours, if any. Overall mean rating was 10.0 (SE = 0, N = 4) implying that rating of 10.0 was given for all the sub-parameters.

Work type

- Work involved blessing/begging, use in marriage functions and religious procession; Jains were said to use elephants extensively for processions. These begging elephants target cities which are economically viable, like Ahmedabad — the number of elephants in a place is believed to depend on the presence of affluent people who can use them for marriages, processions, etc.
- Jaganathpura procession is said to be the biggest in this state, where number of elephants are used.
- Travel all over Gujarat, used for parties and rides for people and children around a big lake in Ahmedabad.
- Duration of work varied from 10 to 16 hours a day, 7 a.m. to 11 p.m.
- The maximum distance covered, carrying any load, was 20 – 60 km, at times 300 km within a span of four days.
- Howdah put on the elephant's back, made of a cushion, was tied to the elephant's body and tail using a rope. It weighed around 30 kg.
- There no shade available during work, not even during the hottest parts of the day.
- Water availability was random depending on the location of the animal.

- Quantity and quality of water available also varied.
- Food availability during work was rare as it depended on devotees providing items such as bananas, apples, etc.

Work is a defining feature of most captive elephants as it is the mainstay for keeping the animals. This was rated across several features covering the nature of work, its intensity and conditions existing while working. Overall mean rating was 1.6 (SE = 0.6, N= 11) with 82% of all ratings getting a score less than 3 (Figure 13).

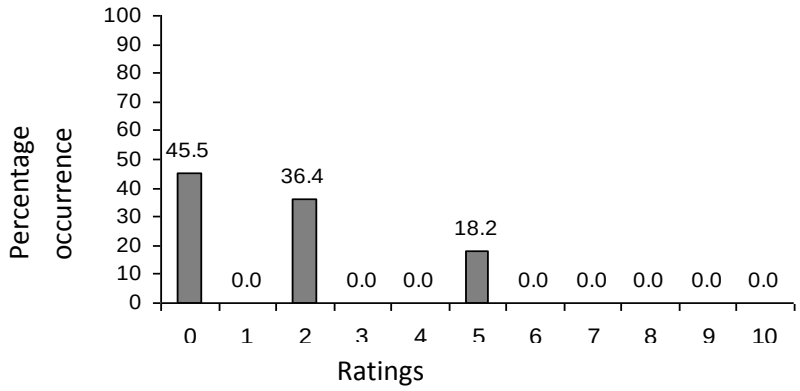
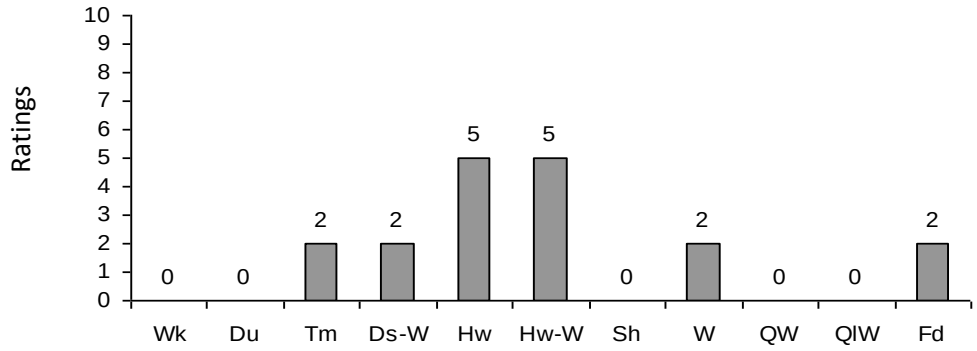


Figure 13: Percent occurrence of ratings for work

Any work alien to an elephant's natural way of life was given low ratings. Mean rating was 0.0 (SE = 0.0, N = 21). Work involving extreme physical efforts or exposure to extreme environmental conditions for prolonged periods was given low rating. Mean ratings was 0.0 (SE = 0.0, N = 21). Elephants were used for rides for tourists and for public. The distance covered with the weight carried was rated. Mean rating was 2.0 (SE = 0.0, N = 21). Making the animal to work under extreme temperatures without proper safeguards, such as provision of shade (Figure 14), was given low rating. Mean rating was 0.0 (SE = 0.0, N = 21).



Wk: Work type
Tm:Time of work
Ds-W:Maximum distance covered with weight
Du: Duration of work
Hw: Howdah type
Sh: Shade availability during work
Hw-W: Weight of Howdah
QW: Quantity of water intake
W:Water availability during work
Fd: Food available during work
QlW: Quality of water for drinking

Figure 14: Ratings for work sub-parameters

Provision of food

- Stall feed was the only source of food which primarily included leaves or stems (banyan, sugar cane, banana – depending on the availability of items).
- Ration charts were not used for feeding. There was no planning regarding food availability and time of feeding for the animals.
- Quantity of food was 50 – 75 kg, with a maximum of 100 kg per day

Elephants which perform taxing work should be given stall feed along with free-ranging browse or graze by the animals in order to compensate for the high energy expenditure (Kurt and Garai, 2007). High ratings were designed to reflect this feature along with such factors as the variety of foods and usage of ration charts for the animals.

Overall mean rating was 3.0 (SE = 1.2, N = 4) with 50% of all the values getting a rating less than 3 (Figure 15).

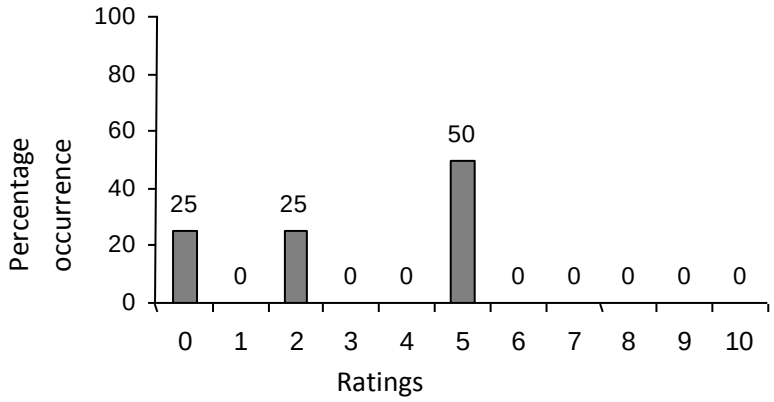
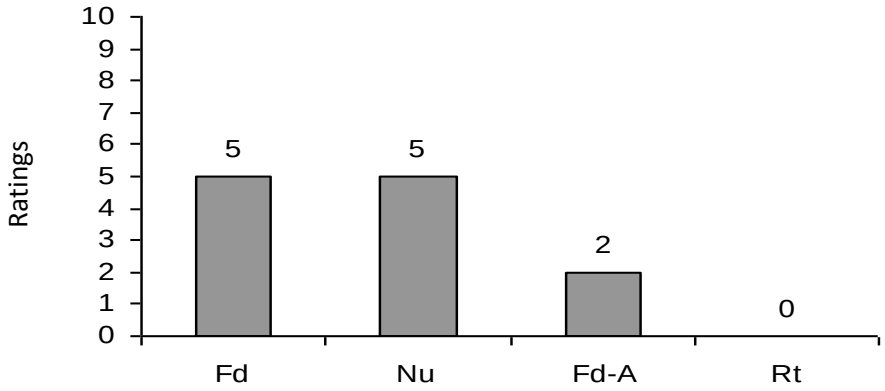


Figure 15: Percent occurrence of ratings for food

Mere provision of stall feed will not be able to cover the range of foods accessible to animals while ranging free. Hence, such food provisioning has been given lower rating. Mean rating was 5.0 (SE = 0.0, N = 21).

The variety of foods provided was rated (Figure 16) considering opportunity to range free. Mean rating was 5.0 (SE = 0.0, N = 21).

The place of feeding has been assigned low rating designed to show unsuitability in terms of chances of contamination, accessibility of food to the animal and absence of appropriate physical environment while feeding. Mean rating was 2.0 (SE = 0.0, N = 21).



Fd: Type of food provisioning Nu: Number of food items
Fd-A: Feeding area Rt: Usage of ration chart

Figure 16: Ratings for food sub-parameters

Reproductive status of elephants

- None of the elephants, either male or female, were reported to be reproductively active.
- None of the adult females were in oestrus cycles.
- Though Jagadnathpura temple kept both male and female elephants. There was no opportunity for mating as the elephants' work schedule involved constant travel with restricted movement. They were restricted within the shelter, due to chaining.

Normal reproductive processes being expressed in animals of appropriate age is considered to be an indicator of the animal's health and welfare. Its absence could have several causal factors, more so in a captive environment. Overall mean rating for reproductive status of both male and female animals was 0.0 (SE = 0.0, N= 6) indicating absence of all the six sub-parameters associated with this parameter

Health status

- Abscesses and foot problems were seen among the elephants.
- Some elephants had damaged eyes, 4 to 5 females were blind.
- One female whose left eye was damaged with blood was oozing from a wound, was fit only to walk around the temple areas, but was made to travel for begging and other work reasons all over the state. Another elephant had reportedly died earlier with the same set of problems.

The following procedures were not followed:

- Deworming
- Vaccination
- Biochemical tests of blood/urine/dung samples
- Body measurements of the animal

Poor health of animals can be associated with poor captive conditions, especially if the animals have yet to cross their prime or are not considered geriatric. Overall mean for health status was 2.1 (SE = 0.8, N = 8) with 50% of all the animals getting a rating of 0 (Figure 17).

Occurrence of disease or injury has been given a low rating. Mean rating was 4.0 (SE = 0.0, N = 21) as all the observed animals were said to have abscesses and foot problems, among other health issues.

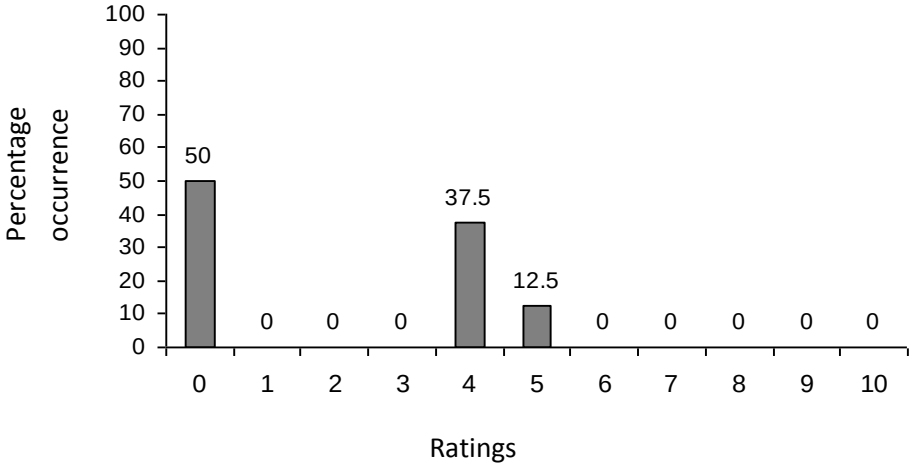
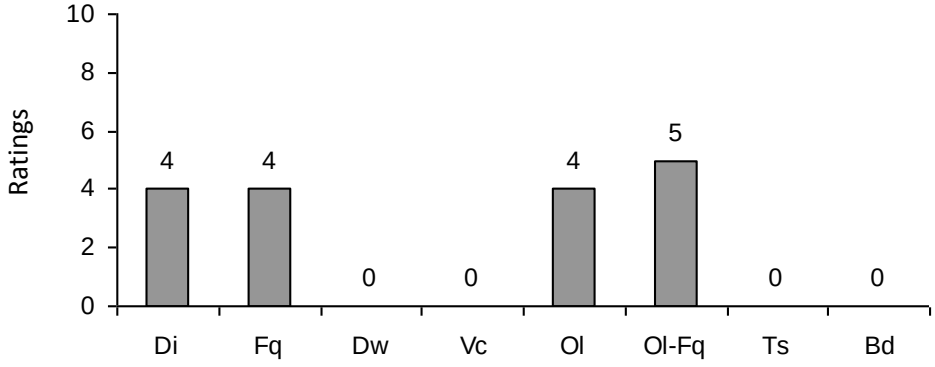


Figure 17: Percent occurrence of ratings for health status

Consistent occurrence of disease or injury points towards causes related to captive conditions and/or poor or absent veterinary care. Mean rating was 4.0 (SE = 0.0, N = 21). None of the observed animals were said to have been vaccinated (Figure 18). Rating was 0.0 (SE = 0.0, N = 21). Oiling was practiced for various reasons as a fly-repellant or as a coolant. This was given a rating of 4.0 (SE = 0.0, N = 21).



Di: Disease/Injury occurrence
Fq: Frequency of occurrence
Dw: Deworming status
Vc: Vaccination status
Ol: Oiling status
Ol-Fq: Frequency of oiling
Ts: Blood/ Dung/ Urine tests
Bd: Body measurements taken

Figure 18: Ratings for health sub-parameters

Veterinary care

- All the elephants were referred to a local veterinary doctor who had no experience in treating elephants.
- Doctor's visits were only when called/when a problem was severe or it depended on the owners' interest.
- Veterinary assistant was not available for any of the animals.
- Clinical or health records were not maintained.
- There was no veterinary care facility for any of the animals

Availability of veterinary doctor, veterinary assistant and facilities were evaluated. Overall rating was 0.0 (S.E. = 0.0, N= 9) with absence of any facility and lack of any record (service/clinical/other records). Provision of staff quarters for mahouts, status of howdah and maintenance of service, clinical or other records was rated. Overall rating was 0.8 (SE = 0.8, N= 5) with 80% of the values getting a rating of zero (Figure 19).

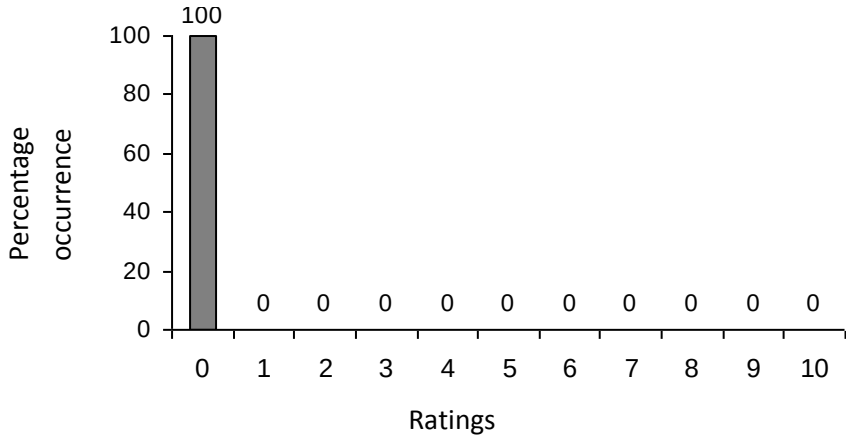
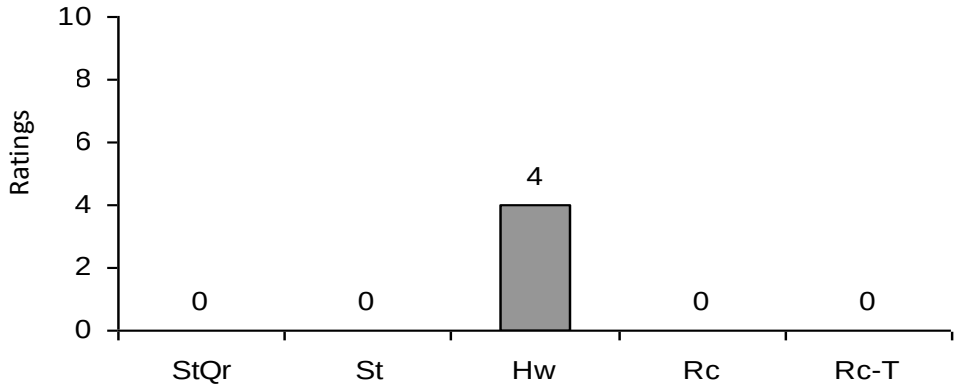


Figure 19: Percent occurrence of ratings for veterinary care

- Howdah was said to be in a bad condition (Figure 20)
- No records of any kind was maintained



StQr: Availability of staff quarters St: Status of quarters
Hw: Status of howdah Rc: Record keeping
Rc-T: Record keeping type

Figure 20: Percent occurrence of ratings for infrastructure and record keeping

The overall mean for the elephants across all the 86 parameters was 2.3 (SE = 0.1, N= 1806) with 71% of all the values getting a rating less than 4 (Figure 21). Ratings less than four are considered to represent poor welfare conditions.

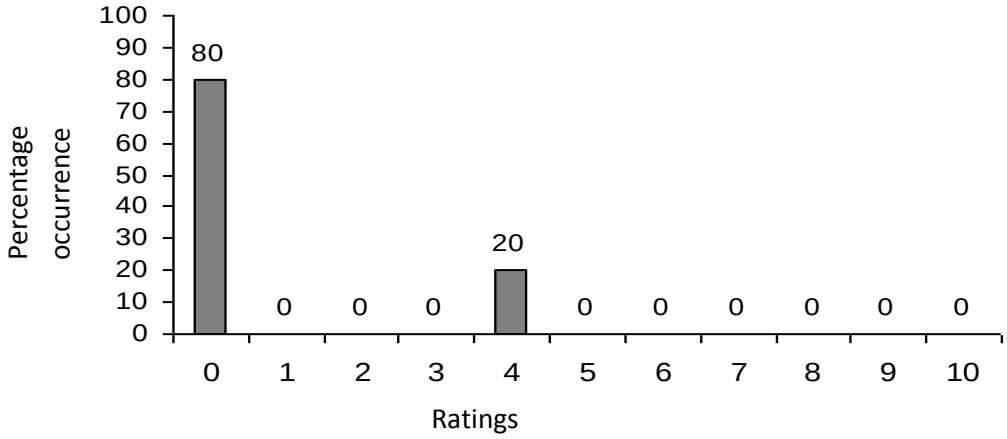


Figure 21: Percent occurrence of ratings across all parameters

Significantly, only 5% of the observed sub-parameters showed variation. 95% of the values were uniform (Figure 22), even though the animals belonged to different temples.

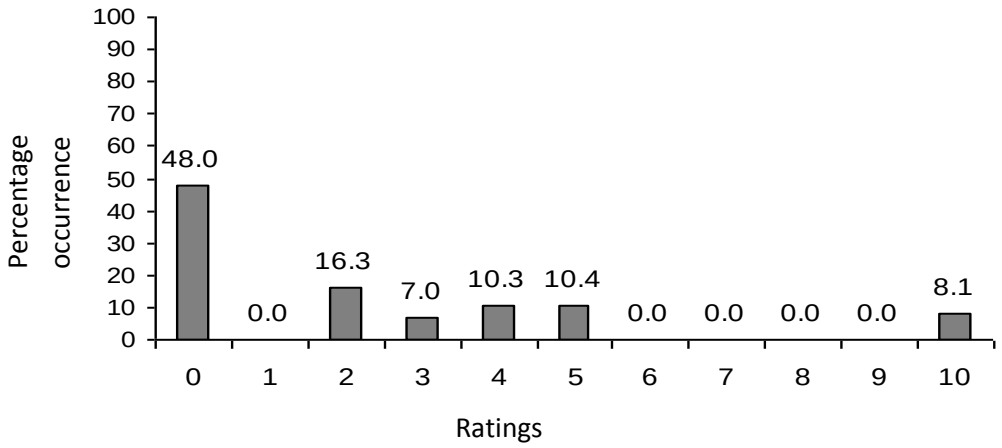


Figure 22: Percentage occurrence of ratings for the elephants

Mahout welfare status

Mahout profile

- Experience in this profession was said to be more than two years.
- Experience with one particular elephant was less than a year.
- Training in this profession was through experience.
- Seventy-six percent of the mahouts (N = 21) came from one family of mahouts.
- Mean salary of the mahouts was Rs. 2380/- per month, ranging from Rs. 2000 to 2500/- per month.
- All the handlers were married and had four to five children.
- None of them were educated.
- Each mahout was said to use a stick and ankush to control his elephant.
- There was no periodic health check-up or provision of insurance cover for the handlers.
- All the mahouts were said to consume alcohol.

The socio-economic condition of the mahout is an important for his welfare as well as that of the animal he handles. Poor welfare status may reflect on the way the animal is handled. A total of thirteen parameters were observed and rated. Overall mean rating was 2.8 (SE = 1.1, N = 13) with 62 % of the values getting a rating less than 4 implying poor welfare conditions (Figure 23).

Greater experience as a handler may help in better care for the animal and also equip mahouts to have greater caution in handling unpredictable elephants. Mean rating was 5.0 (SE = 0.0, N = 21). It is assumed that greater experience with one specific animal is good for the animal as both handler and animal develop greater understanding of each other. Mean rating was 5.0 (SE = 0.0, N = 21).

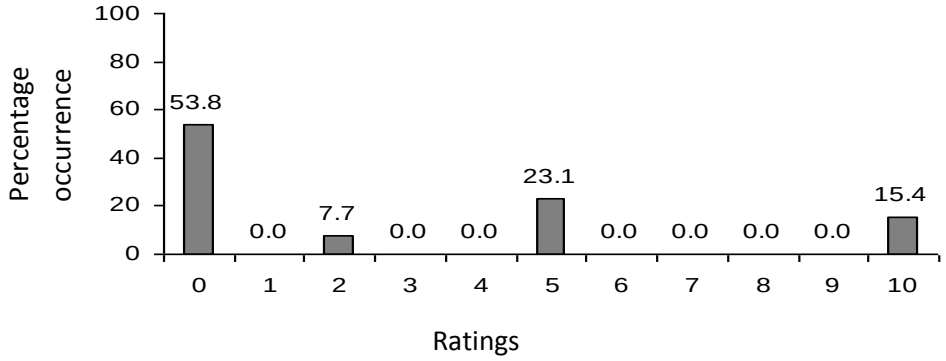
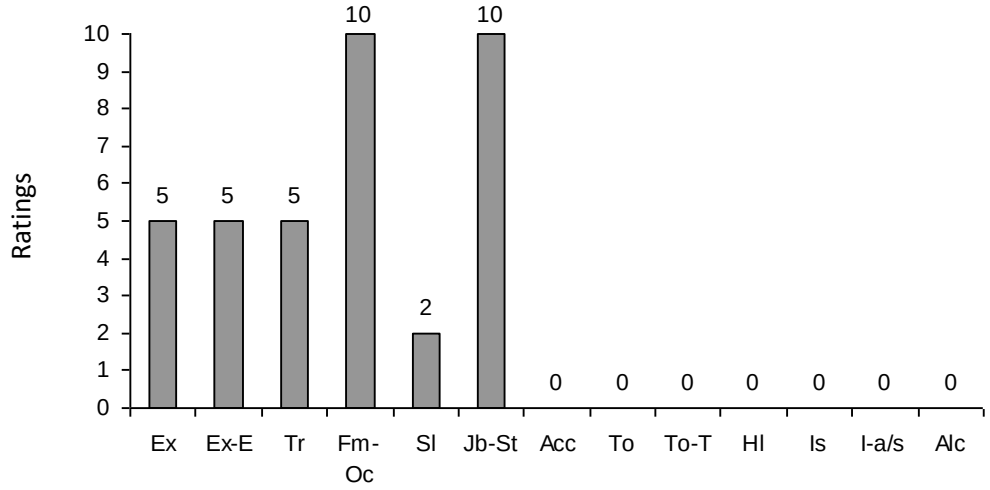


Figure 23: Percent occurrence of ratings for mahout

Salary which could support a family of four to five in an urban environment was given high rating. Rating was 2.0 (SE = 0.0, N = 21) implying poor remuneration for the handlers. All the mahouts were said to be permanently employed. Mean rating was 10.0 (SE = 0.0, N = 21). Provision of insurance in case of death/injury of the mahout was rated. The nature of the profession makes it necessary for such insurance to be available to the handlers. Mean rating was 0.0 (SE = 0.0, N = 21). Consumption of alcohol by the handler was given a low rating. Mean rating was 2.5 (SE = 0.75, N = 4) with three of the four handlers interviewed said to be consuming alcohol (Figure 24).



Ex: Experience as % of handler age
Ex-E: Experience as % of elephant age
Tr: Training received
Rel: Having mahout/cawadi as relatives
Fm-Oc: Family occupation
Sl: Salary paid
Jb-St: Job status
Acc: Accommodation availability
To: Use of tools to control elephant
To-T: Tool type
Hl: Health check-up
Is:Insurance avaialbility
I-a/s: Insurance amount/ source
Alc: Alcohol consumption

Figure 24: Ratings for mahout sub-parameters

The overall ratings (Figure 25) value for mahout as well as elephant represented poor welfare status.

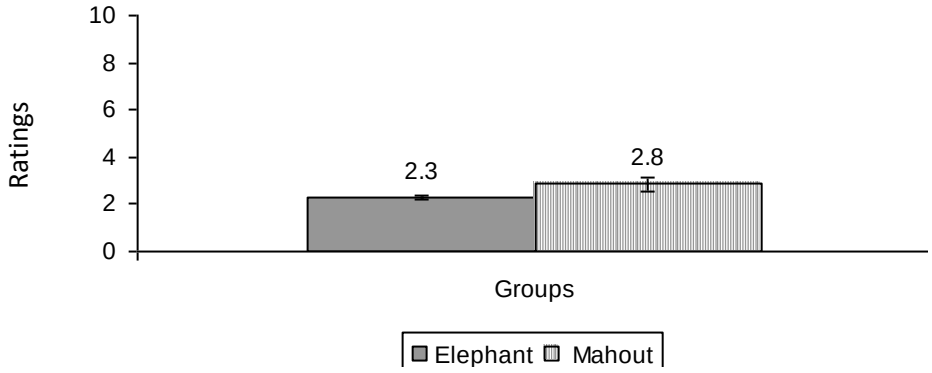


Figure 25: Patterns of ratings for both elephants and their handlers

Discussion

All the elephants, observed at the three temples were given the same rating for most of the observed parameters. There were differences in only 6% (for social interaction related variables) of the 86 parameters assessed. This shows uniformity in conditions of captivity for the animals. The maintenance of these elephants by temples did not ensure their stay in one place. In fact, the opposite was true — the animals were made to walk all over the state. The overall mean for the elephants across all the 86 parameters was 2.3 with 71% of all the values getting a rating less than four. Ratings less than 4 are considered to represent poor welfare conditions.

Ratings have been given considering each parameter independently. Thus, more than half of the ratings occur under the category of "poor" welfare status, which is of immense significance. This is so because the animal experiences these conditions in totality and undergoes a cumulative or associated effect. Hence, the effect of prevailing conditions could lead to shortened life-span as an extreme effect; a fact that might not be brought to notice in the absence of maintenance of any records by the management.

Welfare conditions deleterious to the animals were:

- Absence of a suitable shelter was observed for the animals. Provision of a shelter with concrete flooring without regular cleaning is an ideal prescription for unhealthy conditions and potential health hazards for the animals. The existence of wet/dirty conditions and hard substrates has been reported to cause foot problems (Rajankutty, 2004; Mikota, et al., 1994) [†]. The animals were kept within such structures for at least eight hours in a day.

- Exposure to extreme temperatures: All the elephants were made to work between 10 to 16 hours a day. This involved walking on tar roads for 20 – 60 km from 7 a.m. to 11 p.m. Hence, the elephants were walked irrespective of the prevailing temperatures during the day. Mean temperature vary from 11°C to 45°C for the state of Gujarat.

Mean body temperature of elephants is said to be 35.9 ^{o} C Summer temperatures can reach a maximum 42°C. During this period, the animals are walked over hot tar roads without any access to shade, or rest. Wild Asian elephants have been reported to rest/sleep during the hottest parts of the day (Kurt and Garai, 2007). Wild African elephants have been reported to seek suitable landscape to regulate body temperatures during periods of high ambient temperature (Kinahan, et al. 2007). Coupled with increased body temperatures during the day was the practice of enclosing the animals within closed structures at night, thereby effectively preventing easy loss of body heat to the surrounding environment.

Prolonged exposure to sunlight can be deleterious to the eyes (Kurt and Garai, 2007, Baruah, 1998). This is borne out by the fact that nearly eight elephants (38%) were either blind in one eye or had eye problems.

- Maintenance of elephants in states like Gujarat with high mean temperatures entails making extra efforts to provide suitable environment for the animals. This was conspicuous by its absence as the animals were neither provided a bath regularly nor was there any provision of bathing place with sufficient water as the elephants were constantly on the move as part of their work schedule. Drinking water for the animals was also contingent upon availability at the location.

- The presence of more than one elephant in a temple during the night, post-work, did not ensure normal expression of social interaction, as all the animals were chained using one metre long chain.

- The absolute lack of normal reproductive expression among all adult elephants points to serious underlying causes. Stress can lead to absence of reproductive activity among captive animals (Clubb and Mason, 2002).

- All the observed animals had access to veterinary doctors with no experience in treating elephants. There were no regular visits either. None of the animals had been vaccinated or dewormed.

- There was complete absence of record keeping of any kind. This implies lack of knowledge and apathy in providing care and resources to the animals.

The overall rating for mahout as well as elephant represented poor welfare status.

- Salary paid to the mahouts was low. A yearly income of Rs. 27,000/- is inadequate, in today's context, to support a family. All the mahouts were said to be married and had to maintain four to five children.

- None of the handlers had had any kind of health checkup. Medical check-ups help in maintaining the person's health profile. Also, elephant handlers are advised to be checked for incidence of tuberculosis (Anon., 2003).

- There was no provision of insurance cover for the mahouts.

Mahout and elephant relation

- All the mahouts were said to use stick and ankush to control their animals.

- Duration spent with each animal was reported to be less than a year which implies frequent changes of mahout and related lack of welfare for the animal and safety for the mahout.

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† Original not seen.

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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 to alleviate their suffering at the hands of humans. CUPA does not differentiate among pet, stray or wild animals, since all of them require assistance and relief from cruelty, neglect and harm. The organisation's objective has been to design services and facilities which are employed fully in the realisation of these goals.

Asian Nature Conservation Foundation (ANCF) is a non-profit public charitable trust set up 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 coordination with governmental 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 flora.

Gujarat Society for Prevention of Cruelty to Animals (GSPCA) was founded in 1993 by Snehal Bhavsar in Baroda, GSPCA works with the State Government and other agencies in issues relating to the rescue and rehabilitation of wild animals, trading and poaching of wildlife and related issues. The organisation is very active in Gujarat and has been working, for the last few years, towards raising awareness on the plight of captive elephants in the State.

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 organisations in 153 countries. WSPA brings together people and organisations throughout the world to challenge global animal welfare issues. It has 13 offices and thousands of supporters worldwide.

Photo credits: Raj Bhavsar

The occurrence of wild animals outside their existing natural range isonly under captive conditions. The maintenance of wild animals beyond their natural range areas may involve exposing them to unsuitable environment. This document investigates the welfare status of captive elephants belonging to three temples (Jaganathapur temple at Ahmedabad, Hanuman temple at Baroda and Suraj Ramji Mandir at Surat), and elephants at the Forest department and Zoo in the state of Gujarat. Data was collected through observation of elephants, and interviews with mahout and/or management regarding housing conditions, provision of everyday food and water requirements, veterinary care and opportunity for expression of natural behaviors as seen in wild elephant

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