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Population Status,
Management and
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Elephants in Captivity: CUPA/ANCF- Technical Report.12



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1: Research Scientist, Asian Nature Conservation Foundation, Innovation Centre, Indian Institute of Science, Bangalore - 560 012, Karnataka; **2:** Senior Veterinary Surgeon, Darjeeling Goodwill Animal Shelter, Bong Busty, Kalimpong, Darjeeling, 734301, West Bengal; **3:** Researcher, Compassion Unlimited Plus Action (CUPA), Veterinary College Campus, Hebbal, Bangalore 560 024, & Wildlife Rescue & Rehabilitation Centre (WRRC), Bannerghatta Biological Park, Bangalore – 560083, Karnataka

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Authors: Surendra Varma, Naveen Pandey and S. R. Sujata

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Compassion Unlimited Plus Action (CUPA),
Veterinary College Campus, Hebbal,
Bangalore 560 024
cupablr@gmail.com

or

Publications officer,
Asian Nature Conservation Foundation (ANCF)
Innovation Centre,
Indian Institute of Science,
Bangalore 560 012
Email: publications@asiannature.org

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Preface

Captive Elephants in West Bengal belong to two distinct regimes: forest based camps run by the forest department (FD) and circuses. In terms of captive conditions, FD elephants are primarily exposed to natural physical conditions (forest areas), with opportunity available to express species-specific behaviours such as foraging, social interaction, play, sexual behavior etc. Occasionally, a few elephants are used for tourism related work. One drawback for these elephants is the arrival of wild male elephants into the camp in search of mates. The wild elephants attack/injure captive males which are fettered using chains and are unable to defend or run. Erection of fences has not helped as these barriers have been broken by the wild elephants.

Elephants belonging to circus are usually not stationed in this state; they are transported across long distances to various cities/towns. Transportation usually is done through train or truck— involving periodic loading and unloading of the elephants. There have been incidents of elephants being injured, sometimes critically, while transportation across places; some elephants have had to be euthanized owing to the critical nature of their injuries. While unloading or loading elephants, elephants fall and become recumbent— such incidents have happened along roadsides— they lie in this state for several months, without any recourse to treatment or translocation.

It was difficult to survey captive condition for circus elephants as they were in different regions, even if present in this area, opportunity to collect data would have been difficult. The elephants surveyed in circuses in other parts of the country project an environment characterized by unnatural conditions (physical space, water and food) as well as lack of opportunities to express species-typical behaviours as they are employed for only short periods for performance and are chained for the rest of the time. This situation would be similar for the elephants of circuses belonging to West Bengal as it is the very nature of circuses to be in midst of a densely populated setting to attract maximum possible audience. Such densely populated regions are towns and cities with no facilities for a natural physical environment (vegetation, natural flooring, flowing and easily accessible water source).

Among four locations where captive elephants belonging to Forest Department are kept, Jaldapara Wildlife sanctuary, in addition to supporting wild elephants, has about seventy percentages of the total captive elephants belonging to the department. It was experienced that elephant belonging to circus are very difficult to sample. Given this, it is assumed that investigation on captive elephants in Jaldapara Wildlife Sanctuary may reflect the overall status of captive elephants of the state.

Jaldapara wildlife sanctuary hosts the Greater One-Horned Rhinoceros (*Rhinoceros unicornis*), forming a valuable habitat to the endangered species. In addition to a shrinking habitat, the Rhinoceros faces the threat of poaching in its range countries. Jaldapara's captive elephants could act as a good model for anti poaching by using them for patrolling forests thus aiding directly in conservation. In a landscape with a combination of tall and short grass, where patrolling of forests by foot is very difficult, patrolling forests or protection of the rhino from poachers using captive elephants may be practical.

It would be pertinent to note that a common perception about captive elephants in forest areas is that the animals are underutilized and consume the limited resource available to the department; they do not contribute in any way to income/resource generation. This in turn has led to decisions to involve such elephants in activities alien to an elephant's natural behaviour: use for joy rides, in religious/ ceremonial functions, in games such as polo or football. These activities not only bring in issues of stress and reduced welfare for the elephants, they do not add to the concept of conservation. Involving captive elephants in patrolling forests would provide a near-natural environment for the animals; when the elephants are not used for patrolling, they are allowed to range-free in the forest to engage in species-specific activities with opportunity available for mating with their wild counterparts.

As mentioned earlier, this document considers the captive conditions of elephants in Jaldapara WLS, focusing on their welfare status. The captive conditions in this WLS are representative of FD elephants in West Bengal as the WLS is home to a large number of captive elephants. Other camps run by the FD employ similar management practices and mirror the captive conditions of Jaldapara. The documents deals with overall population status, management and welfare of captive elephants in West Bengal along with an executive summary and recommendations for improving the welfare status of captive elephants for the state.

Acknowledgements

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Executive Summary

Captive elephants in West Bengal come under two different administration such as forest based camps run by the forest department (FD) and circuses. Of 83 captive Asian elephants with the FD, 58 are in Jaldapara Wildlife Sanctuary (WLS), 15 in Gurumara, 8 in Buxa and 2 in Sukhna. There are three circuses operating in Kolkata (West Bengal) accounting for a total of 15 elephants.

About seventy percentage of elephants belong to forest department are kept in Jaldapara Wildlife sanctuary, in West Bengal, in addition to wild elephants, the sanctuary is home to a number of captive elephants maintained by the forest department. Elephants belonging to circus are usually not stationed in this state and difficult to sample them. Given this, it is assumed investigation on captive elephants in Jaldapara Wildlife Sanctuary may reflect the overall status of captive elephants of the state.

With this background, this investigation aims to assess the welfare status of elephants in Jaldapara Wildlife Sanctuary, by considering features pertaining to the physical environment, social, psychological and reproductive factors, and health issues. It also assesses the professional experience and socio-economic status of handlers (mahouts/ cawadis) as they are integral to the any captive elephant keeping system

Welfare has been measured by comparing captive conditions with those observed in the wild in terms of the physical, social, psychological, reproductive and health aspects. A rating scale from unsuitable conditions to suitable conditions was used to assess the welfare status of captive elephants and their handlers.

Forty-two elephants were observed, of which 26 were females and 16 males. Age ranged from a new-born calf to 56 years for females, from 3 to 34 years for males. Fourteen percent of the elephants were constituted by calves (less than five years of age).

Captive born elephants constituted 68% of the elephants whose source was known, 71% of the captive born elephants were sired by wild males; thirteen elephants, all females, had been purchased from the Sonapur Mela in Bihar. Mean Rating (M-R) for source of elephant was 5 implying a deviation of 24% from Expert Rating (E-R).

Forty six percent of elephants were used for tourism related work and comparable percentage (24% and 30%) were used for tourism + patrolling and patrolling + fodder collection. M-R was 3.8 showing a deviation of 52.3% from E-R.

All the elephants were kept in forest conditions, the animals were chained in the open when not working and natural earthen flooring was available; M-R for shelter type was 0.5 with a deviation of 93.8% from E-R. M-R for flooring was 8.0 with no deviation from E-R.

Tap water and rivers/streams were the combined source for 90% of the elephants. Distance to the river varied from 100m to 2.5 km. Elephants were bathed in the river/ stream; frequency was once-a-day; duration was 1-1.5h. M-R was 4.3 showing a deviation of 45.7% from E-R.

Forty one percent of elephants were allowed to interact with other elephants in the camp. Duration of interaction ranged from 6- 24h/day and number of individuals ranged from 1-3. M-R was 4.5 implying a deviation of 43.8% from E-R.

Ninety percent of elephants were chained when not working and 54% elephants were hobbled. Six female elephants (aged between 25-50y) and five male elephants (aged between 11-34y) were fitted with spiked chains. None of the elephants was allowed to free range at night. M-R was 2 with a deviation of 78.7% from E-R.

Seventy one percent of elephants were quiet and reliable, 22% were reported to be aggressive towards people/ other elephants, of these only one was a female and the rest were males. Two adult elephants, a 34y old male and a 50y old female, had both killed their handlers. Of the ten elephants showing stereotypy, six were females and four were males. M-R was 6 with a deviation of 23% from E-R.

Sixty seven percent of elephants were used for work, elephants were aged between 8 to 56 yrs. Work type was patrolling and providing rides for tourists or fodder collection. Number of people carried for rides ranged from 3-8; maximum distance covered with weight was 5-10km and howdah weight was less than 50kgs; howdah consisted of soft *gunny* bags. M-R was 4 implying a deviation of 47.6% from E-R.

All elephants were allowed to forage as well as provided stall feed. Foraging, however, was limited to those occasions when the elephants were worked (patrolling) or taken into the forest for fodder collection. Stall feeding duration ranged from 3-8h; included fodder was *Hogla* (*Typha angustifolia*), *Prundi* (*Alpinia nigra*), *Nol* (*Arundo donax*), *Banaspati*, *Bhutta grass* (*Tripsacum laxum*), *malsa*, *Madhua* (*Saccharum arundinaceum*), *Khagra*, *Dhadda*, (*Saccharum narenga*) *Chepti* and cooked food such as rice, pulses, *jeera* (cumin seeds), *methi* (fenugreek seeds) and salt. M-R was 4 with a deviation of 53% from E-R.

Only two adult female elephants were not exposed to males. Wild males were the male source for all the matings. Number of calves born ranged from 0 to 8 per female; two premature births were reported for a 25 years old female, both calves did not survive. M-R for female reproductive status was 5 indicating a deviation of 25.2% from E-R.

None of the observed adult males was exposed to females, none had sired any offspring and only one male of the eight exhibited musth; had killed a person during musth. M-R was 0.3 with a deviation of 95.8% from E-R.

Foot problems such as toe nail cracks, foot rot, lameness, or arthritis was observed with foot problems noticed in 29% of the observed elephants; gastro-intestinal problems were observed for a 50y old female elephant. Body measurements were taken annually for all elephants except a new-born calf and a 35y old female. M-R was 6 with a deviation of 28% from E-R.

All elephants had access to a veterinary doctor who had 2 years experience in treating elephants. Frequency of visits was weekly and a mobile veterinary clinic with minimum

facilities was available; staff quarters, cooking shed, provisions shed were provided. M-R was 5 with a deviation of 40% from E-R.

Professional experience of mahouts in this profession was 12 years and with a specific camp elephant was 9 years and it ranged from six months to 30 years. Number of elephants each handler had worked with ranged from 1-5. M-R was 6 showing a deviation of 32.1% from E-R.

Seventy two percent of handlers did not have relatives working in this profession and 67% of handlers were educated, none had studied up to the 10th class. Mean annual salary drawn was Rs.34, 000; ranging from Rs.16,800 to Rs.84,000/-. Fifty six percent of handlers were not covered by insurance and 61% of the handlers consumed alcohol; most was consumed after work. M-R was 3 indicating a deviation of 51.1% from E-R.

Overall M-R, considering all observed sub-parameters together, was 4.3 implying a deviation of 42% from E-R and 42% of all parameters across physical, social and reproductive features, showed a deviation of 50% or more from E-R.

Recommendations

- The core nature of a circus— the need for locations to be in densely populated areas— implies its residence (temporary or otherwise) in towns or cities. These areas are characterized by absence of open physical space with vegetation suitable for elephants, presence of hard substrates, water sources which cannot be accessed by elephants when needed (taps, hose-pipes, tankers), compounded by nearly continuous chaining of the animals. In addition, exposure of elephants to humans leads to health concerns for man and animal. Keeping these issues in mind, it is strongly recommended that circuses be banned from employing elephants.
- The physical location of Forest Camps – near or in forest areas with presence of streams— provides an ideal setting for captive elephants. In presence of a group and opportunity to range-free, most if not all, species-typical activities can be expressed by captive elephants.

Some issues that need to be managed are:

- Wild male elephants attacking captive males: though, this appears to be a difficult problem to control. One way would be to allow captive males to range-free at night, a practice followed by some states in the country. Hobbling should not be resorted to while free-ranging, use of drag chains can serve a similar purpose.
- Steps have to be taken to prevent poaching of captive male tuskers— this would have to involve Anti Poaching Camps keeping tabs on the movement of its captive tuskers.
- In West Bengal, Jaldapara and Gorumara are the last remaining habitat for the Greater One-horned Rhinoceroses. Captive elephants in forest camps can be used for patrolling these forests, this activity would be in keeping with providing a natural environment for the elephants, providing opportunity to forage and consume water from streams/rivers/ natural depressions, engage in social interactions among other elephants in the group (even while patrolling).
- While patrolling, some work conditions have to be regulated: patrolling on a rotational basis (keeping in mind the social cohesiveness of the group), sufficient rest to be given
- Even while patrolling, elephants have to be provided sufficient opportunity to graze/ rest— hence, prior planning regarding the number of days/hours and the distance covered has to be in place
- It is important that the elephants are provided opportunity for ranging-free without the use of hobbles.
- The policy of chaining the elephants has to be regulated to a minimum period necessitated by work or veterinary procedures. Free-ranging opportunity in forest conditions would ensure better welfare for the elephants
- Long-term policy for this camp has to be envisaged: whether the camp would like to continue its success in adding to the elephant population in captivity; if so, plans for the increased number of elephants have to be set up. The policy of moving “excess” elephants should not break the established social grouping/ relationships among the elephants in the camp.

Introduction

Under two different management regimes such as Forest camp and Circus, captive elephants in West Bengal are managed. The Forest Department has a total of 83 elephants under its management and 58 elephants are in Jaldapara Wildlife Sanctuary (WLS), 15 are in Gurumara, 8 elephants are in Buxa and 2 in Sukhna. There are three circuses operating in the State accounting for a total of 15 elephants. About seventy percentages of elephants belong to forest department are kept in Jaldapara Wildlife sanctuary, in West Bengal. Elephants belonging to circus are usually not stationed in this state and difficult to sample them. Given this it is assumed investigation on captive elephants in Jaldapara Wildlife Sanctuary may reflect the overall status of captive elephants of the state.

Jaldapara Wildlife sanctuary, in West Bengal, was notified as a protected area in 1940-'41; it covers an area of 216km², harboring diverse wildlife. In addition to wild elephants, the sanctuary (termed Forest Camp— FC in this report) is home to a number of captive elephants maintained by the state forest department. These elephants, wild caught/ rescued from the wild/ born in captivity, are trained and then used for work such as timber hauling/ for tourism.

Objective

Conditions provided in captivity for elephants will not be similar to those experienced in the wild as living conditions are controlled by people. This report aims to:

- Assess the welfare status of elephants, in the FC, by considering features pertaining to the physical environment, social, psychological and reproductive factors, and health issues
- Assess the professional experience and socio-economic status of handlers (mahouts/ cawadis) as they are integral to the any captive elephant keeping system

Method

The biological and ecological needs of captive elephants, which are no different from those of wild elephants, are integral to their welfare; these animals have not been selectively bred in captivity to modify their behaviour in consonance with those of human needs. Hence, welfare has been measured by comparing captive conditions with those observed in the wild in terms of the physical, social, psychological, reproductive and health aspects. In addition, veterinary care has also been included, as poor or inadequate care leads to poor health conditions.

The existing conditions have been rated in terms of their suitability to elephants. The existing situation for the elephant/s was surveyed through observation of the animal/s and interview with relevant personnel (Figures 1a, b, c and d).

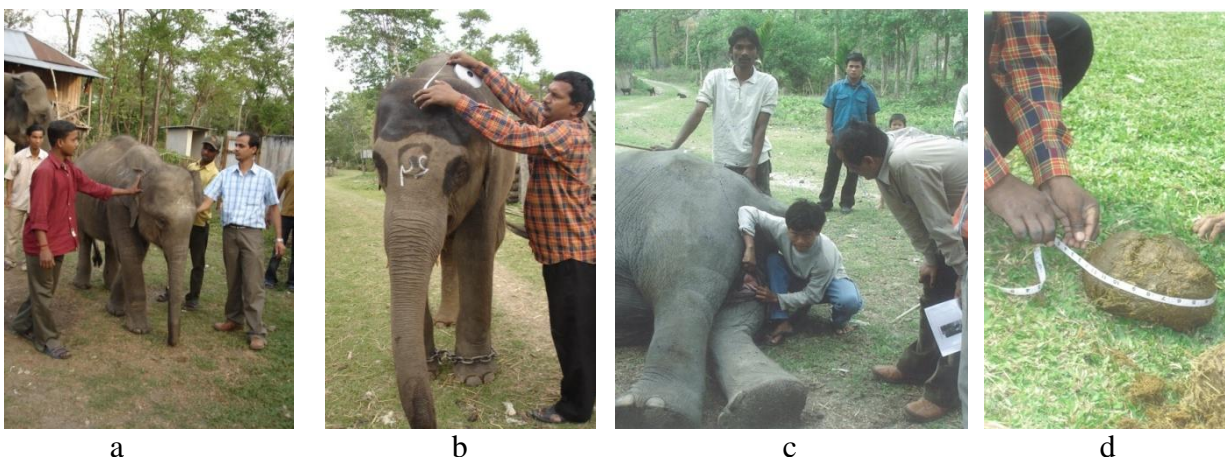


Figure 1a,b c and d: Data collection, interaction with mahout and observation of elephant (a), body measurement (b), assessment of health status (c) and measuring circumference of elephant dung (d)

Rating method

A rating scale from zero (unsuitable conditions) to ten (suitable conditions) was used to assess the welfare status of captive elephants and their handlers. Experts (both wild and captive elephant specialists, wildlife veterinary experts, managers from protected areas, managers responsible for both wild and captive elephants and other wildlife, personnel from welfare organisations and elephant handlers) were invited to assess the welfare based on different parameters and their significance through an exclusive workshop conducted on the subject (Varma, 2008; Varma, et al., 2008; Varma and Prasad, 2008). Experts rated a total of 114 welfare parameters covering major aspects of captivity.

- The experts, based on their concept of importance of a particular parameter to an elephant, developed a 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) for 'source of water' was arrived at from the ratings suggested by each expert by averaging across all the experts' values.
- A mean rating for each parameter, across all the participating experts, has been used as the Experts' Rating (E-R) which represents the importance attached to a parameter i.e., for a parameter with 8.0 as the maximum value, only 2.0 (25%) deviation and parameter with maximum value 9.0 only 1.0 or 10% from the prescribed norm is considered acceptable.
- For example, if an elephant is exposed only to natural flooring, the animal receives a rating of 8 and for entirely unnatural flooring the value is 0; if the 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 2.25 is assigned for small water bodies like tanks and ponds. Tap water (running) gets 1.125 and if only buckets, pots, and tankers are in use, then the allocated value is 0.5. This rating is then averaged across all individuals in that institution to get a Mean Rating (M-R) for that feature. Thus M-R represents the actual situation existing for the elephant/s.

- Therefore, using the maxima given by experts as a base, a rating scale starting from zero to the particular maximum value for that parameter has been used and the data for each animal was collected, in a given regime (for example, forest camp or temple).
- In this investigation, variables which represent a common feature of the captive situation have been grouped to form a parameter. The variables have been termed sub-parameters. For example, the variables shelter type, shelter size, floor type in the shelter; all represent different aspects of the physical space provided to the elephant. Hence, they are grouped together to form the parameter “Shelter” and each constituent variable is a sub-parameter. In this investigation, the E-R for a parameter (say, shelter) represents the mean of E-Rs across all related sub-parameters. The Mean Rating (M-R) for a parameter is the mean of M-Rs across related sub-parameters and denotes welfare status of existing conditions on the ground for the particular parameter.
- The number of such related parameters (sub-parameters) varies for each regime.
- Results have been presented comparing E-R and M-R as a means of comparing the extent of deviation present in the parameters observed. The difference between E-R and M-R (expressed as percent) indicates deviations from the prescribed norm.
- For handlers, the difference between the maxima provided by experts (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.
- N* refers to number of sub-parameters observed. N refers to number of individuals

Result

Population Status

Forty-two elephants were observed, of which 26 were females and 16 males. Age ranged from a new-born calf to 56yrs for females, from 3 to 34yrs for males. Figure 2 gives the age and sex class distribution in the FC. The number of females increased with increasing age upto the age of 40yrs, after which they declined. The number of males declined from the age-class of 16-40yrs itself. There were no elephants, male/ female, aged more than 60 years (see figures 3a,b,c,d,e and f for example of different age sex class of elephants) and 14% (N= 42) of the elephants (considering both sexes together) was constituted by calves (less than five years of age).

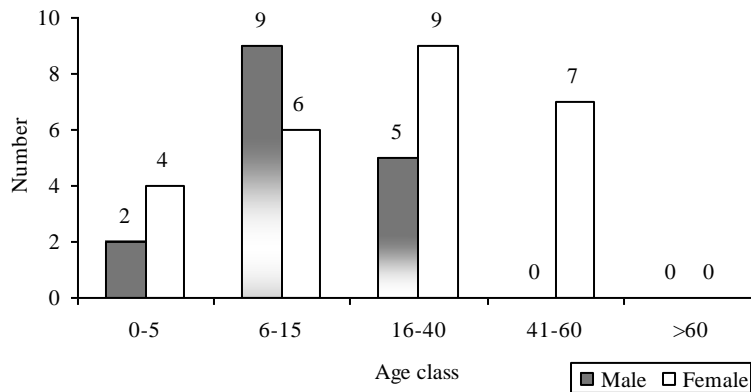


Figure 2: Age-sex distribution of elephants in FCs

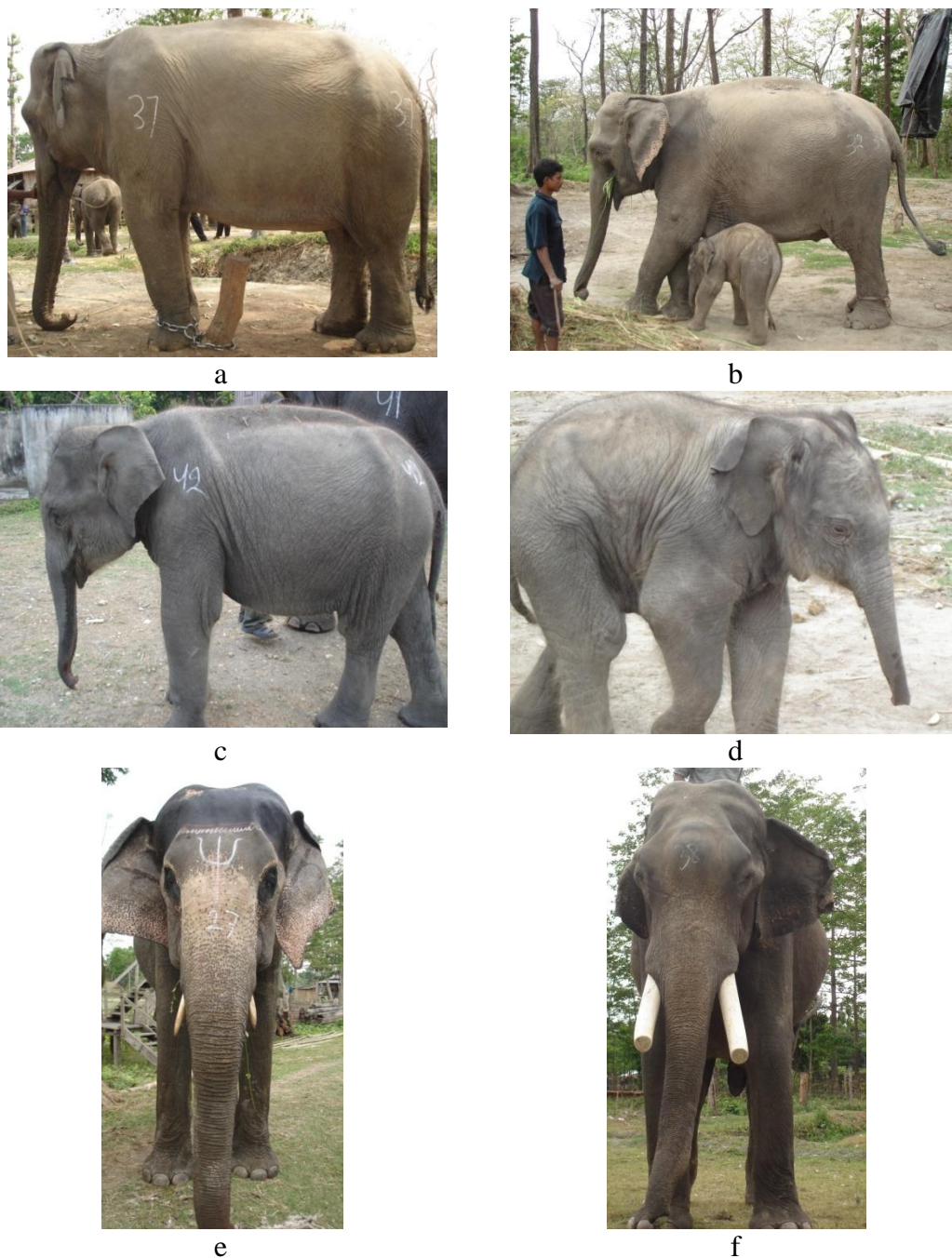


Figure 3a,b,c,d,e and f: Different age and sex class animal observed, adult female (a), adult female with her calf (b) juvenile (c), calf (d), adult males (e and f)

Source of elephants

Acquisition of elephants is an important factor in determining the change experienced by elephants: captive born elephants are exposed to different levels of human control as compared to those brought in from the wild. The elephants experience change in living conditions and consequent stress even when they are shifted across owners/ management types.

- Sixty eight percentages of the elephants (N= 41) whose source was known were captive born; of the 19 mother-offspring pairs, four had been separated, either due to shifting of the mothers or shifting of calves; 63% (N= 41) elephants born in this FC continued to stay there; Figure 4 gives the distribution of known calf-births in the FC
- Seventy one percentages of the captive born elephants (N= 28) were sired by wild males; data was not available for the remaining
- Thirteen elephants, all females, had been purchased from the Sonapur Mela in Bihar

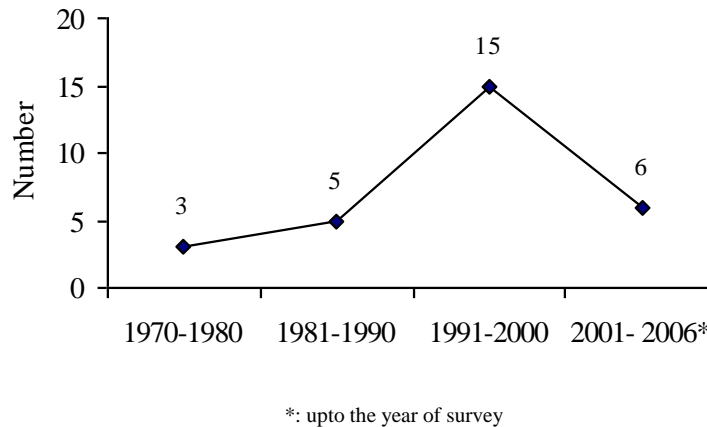


Figure 4: Year-wise distribution of births

M-R for this parameter was 4.6 (SE= 0.3, N= 41) implying a deviation of 24% from E-R.

Purpose of keeping

The aim of maintaining elephants can be an indicator of the prevalent welfare status when considered along with the opportunities provided to express species-typical behaviours.

- Forty six percentages of elephants (N= 37) were used for tourism related work
- Comparable percentages (24% and 30%) were used for tourism + patrolling and patrolling + fodder collection

M-R was 3.8 (SE= 0.3, N= 40) showing a deviation of 52.3% from E-R.

Shelter

Provision of space for movement to perform species-specific activities is essential for captive elephants as wild elephants are known to have home-range sizes of 250- 1000 km² (Sukumar, 2006). This space should have suitable vegetation for the elephants to forage.

- All the elephants were kept in forest conditions
- The animals were chained in the open when not working
- Natural earthen flooring was available

M-R for shelter type was 0.5 (SE= 0.0, N= 30) with a deviation of 93.8% from E-R. M-R for flooring was 8.0 (SE= 0.0, N= 24) with no deviation from E-R.

Figures 5a, b, c and d show the status of shelter and floor provided to captive elephants in the study region.



Figure 5a,b,c, and d: Shelter and floor provided to elephants, open and semi open shelters (a and b) mud floor (c and d)

Water

Ease of availability of water to the elephants when needed, absence of contamination, opportunities to perform natural behaviours (wallowing/ dust-bathing) has been considered for rating. In addition, the scrub material used by handlers has also been rated as hard materials can result in injuries.

- Tap water and rivers/streams were the combined source for 90% of the elephants (N= 41)
- Distance to river varied from 100m to 2.5km
- Elephants were bathed in the river/ stream; frequency was once-a-day; duration was 1-15hrs; bathing materials used were burnt bricks
- The elephants were allowed to drink water 3-5 times/ day
- Water quality tests were not done

M-R was 4.3 (SE= 1.1, N*= 6) showing a deviation of 45.7% from E-R (Figures 6a and 6b).

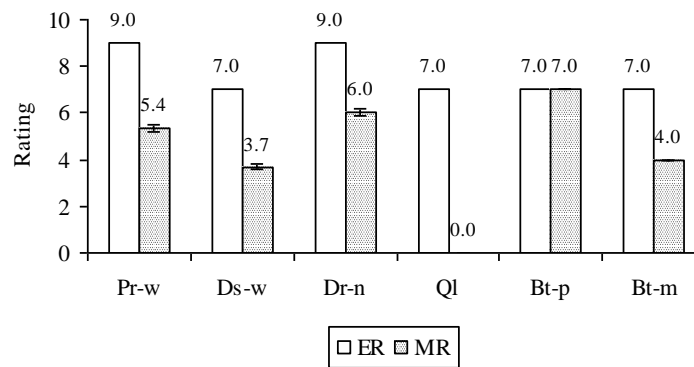
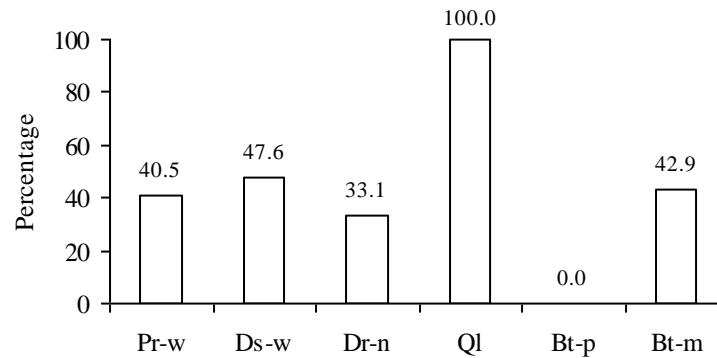


Figure 6a: Comparison of E-R and M-R for 'water' sub-parameters



Pr-w: Availability of perennial source of running water Ds-w: Distance to water source
Dr-n: Number of times drinking water QI: Water quality tests
Bt-p: Bathing place Bt-m: Bathing materials

Figure 6b: Percentage wise deviation from E-R for 'water' sub-parameters

Sleep

Unsuitable sleeping places due to restriction imposed on movement cannot be considered to be suitable for elephants.

- All elephants slept in the open in forest conditions

- The elephants were tied by a chain of length 8-12ft.
- Duration ranged from 2- 10hrs

M-R was 3.2 (SE= 2.9, N*= 3) with a deviation of 60% from E-R (Figures 7a and 7b).

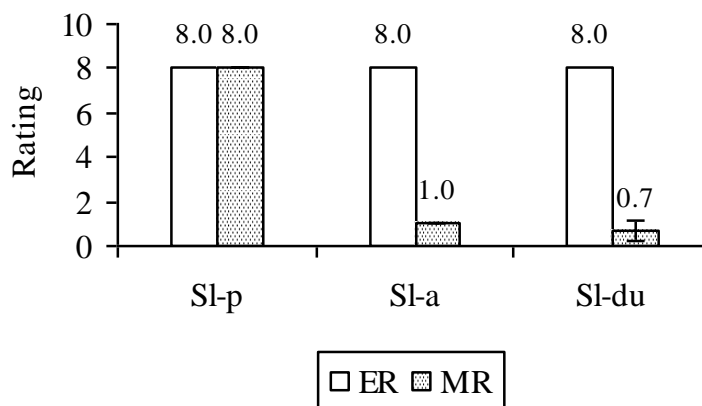


Figure 7a: Comparison of E-R and M-R for sleep sub-parameters

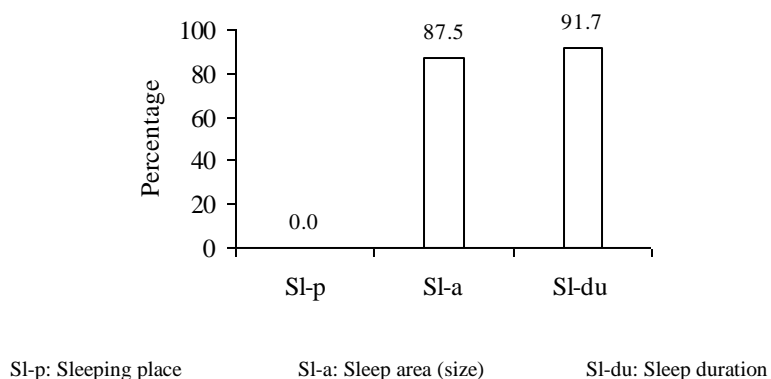


Figure 7b: Percentage wise deviation from E-R for 'sleep' sub-parameters

Walk

Provision for elephants to walk on suitable surfaces in forest conditions can be a form of exercise as well as psychological stimulation.

- All elephants were walked in the forest, accompanied by their handlers
- Distance covered ranged from 3- 15km
- Duration of walk ranged from 1-6hrs

M-R for nature of terrain was 8.0 (SE= 0.0, N= 36) with no deviation from E-R. M-R for duration of walk was 0.0 (SE= 0.0, N=36) showing 100% deviation from E-R.

Social interaction

Most captive elephant systems impose restriction on their animals vis-à-vis opportunity to interact with other elephants.

- Forty one percentages of elephants were allowed to interact with other elephants (Figure 8a and 8b) in the camp; this percentage of elephants included 76% elephants which were less than 10y
- Duration of interaction ranged from 6- 24hrs/day
- Number of individuals, available for interaction, ranged from 1-3

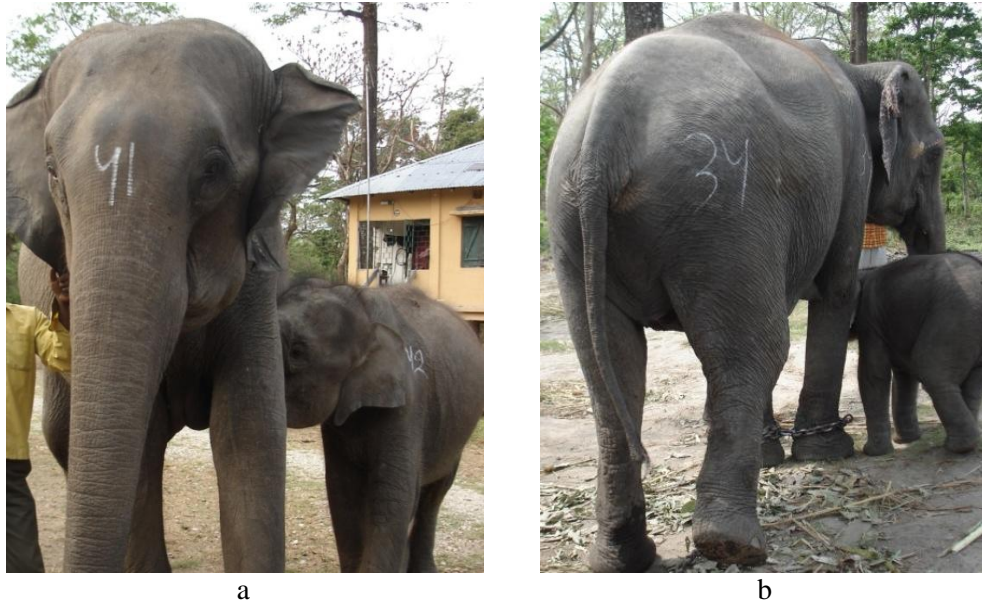


Figure 8a and b: Examples of interactions among the elephants, mother and calf interaction (a and b)

M-R was 4.5 (SE= 0.5, N* = 4) implying a deviation of 43.8% from E-R (Figures 9a and 9b).

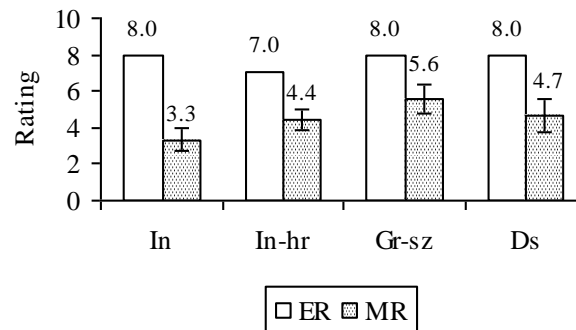
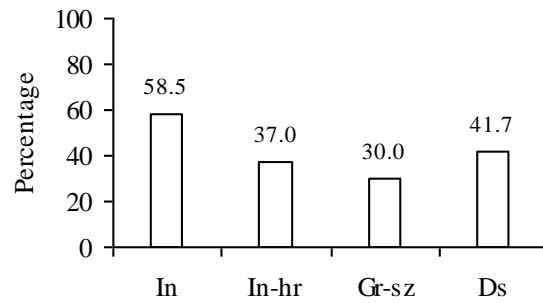


Figure 9a: Comparison of E-R and M-R for interaction sub-parameters



In: Opportunity for interaction

In-hr: Interaction hours

Gr-sz: Group size

Ds: Interaction distance

Figure 9b: Percentage wise deviation from E-R for interaction sub-parameters

Chaining

A practice in captive elephant systems with far-reaching consequences on all aspects of an elephant's life is that of chaining the animal. Restriction on movement prevents expression of species-typical activities even when other suitable features are available for the elephant/s.

- Ninety percentage of elephants (N= 41) were chained when not working
- The elephants which were not chained were less than four years
- All elephants were tied in the leg region
- Fifty four percentages of elephants (N= 37) were hobbled
- Six female elephants (aged between 25-50y) and five male elephants (aged between 11-34y) were fitted with spiked chains
- Chain weight ranged from 9-82 kg (Figures 10a, b, c and d show the types of chains used and 10d gives the relationship between chain weight and age of the animal); chain length varied from 8-12ft.
- None of the elephants was allowed to free range at night



a



b



c



d

Figures 10a,b,c and d: Types of chains used

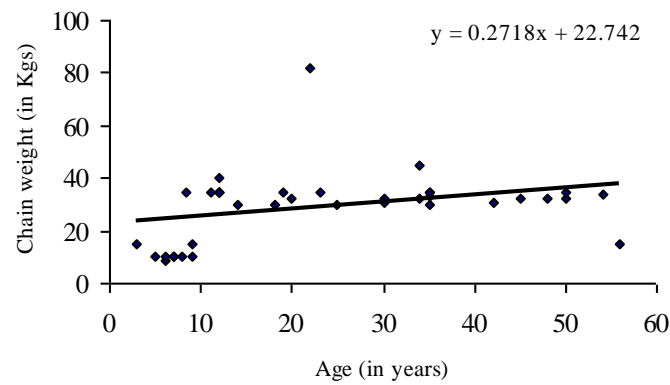


Figure 10d: Relationship between chain weight and age of elephant

M-R was 1.7 (SE= 0.8, N*= 6) with a deviation of 78.7% from E-R (Figures 11a and b).

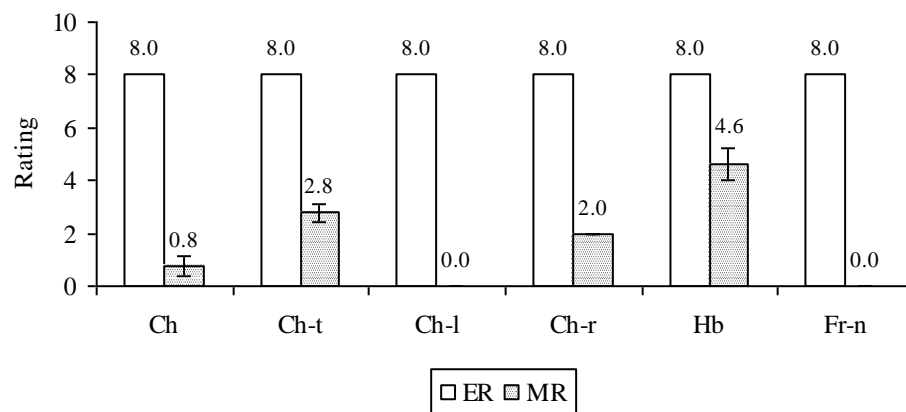
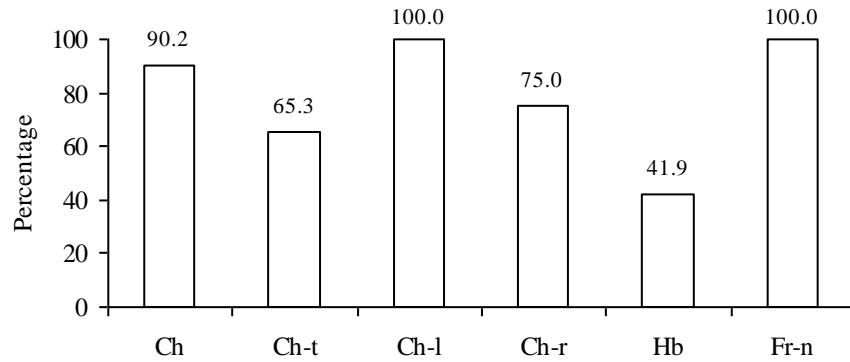


Figure 11a: Comparison of E-R and M-R for 'chain' sub-parameters



Ch: Chained/ free-ranging Ch-t: Chain type Ch-r: Chaining region (on the body) Hb: Use of hobbles
Fr-n: Opportunity to free range at night

Figure 11b: Percentage wise deviation from E-R for chain sub-parameters

Observed behaviour

Elephants which are tractable may not undergo the severity of restrictions imposed as experienced by those which are perceived to be aggressive/ difficult to control. In captivity, stereotypy is considered to be an important indicator of welfare and has thus, been rated.

- Seventy one percentages of elephants (N= 41) were described as quiet/ reliable; 22% (N= 37) were reported to be aggressive towards people/ other elephants, of these only one was a female and the rest were males
- Two adult elephants, a 34y old male and a 50y old female, had both killed their handlers
- Of the ten elephants showing stereotypy, six were females and four were males

M-R was 6.2 (SE= 0.1, N*= 3) with a deviation of 23% from E-R (Figures 12a and 12b).

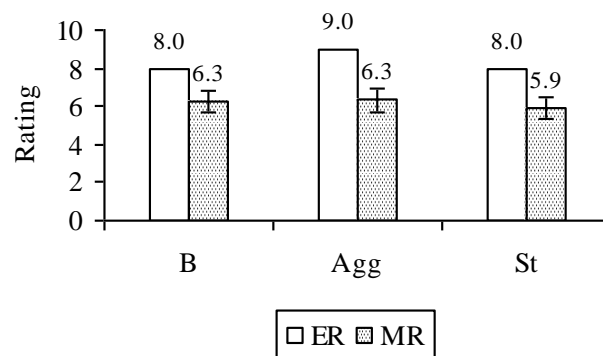
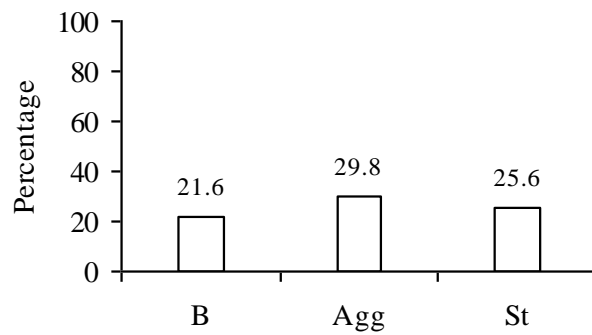


Figure 12a: Comparison of E-R and M-R for 'behaviour' sub-parameters



B: Observed behaviour Agg: Occurrence of aggressive behavior St: Occurrence of stereotypy

Figure 12b: Percentage wise deviation from E-R for 'behaviour' sub-parameters

Work

Work conditions determine not just the nature of behaviours performed; it also affects the opportunities available to the animals to perform species-typical behaviours when not being used for work.

- Sixty seven percentages of elephants (N= 42) were used for work, elephants were aged between 8 to 56yrs
- Work type was patrolling, providing rides for tourists or fodder collection
- Timings varied from 6a.m. to 9a.m., 3p.m. to 5 or 7p.m., 5p.m. to 8p.m.; duration ranged from 3-7hrs
- Age when elephants began to work ranged from 7 to 12yrs
- Number of people carried for rides ranged from 3-8; maximum distance covered with weight was 5-10km; howdah weight was less than 50kgs; howdah consisted of soft *gunny* bags
- Water and food was available for all elephants; rest was not provided for 42% (N= 12) of observed elephants

M-R was 4.2 (SE= 1.3, N* = 7) implying a deviation of 47.6% from E-R (Figures 13a and 13b).

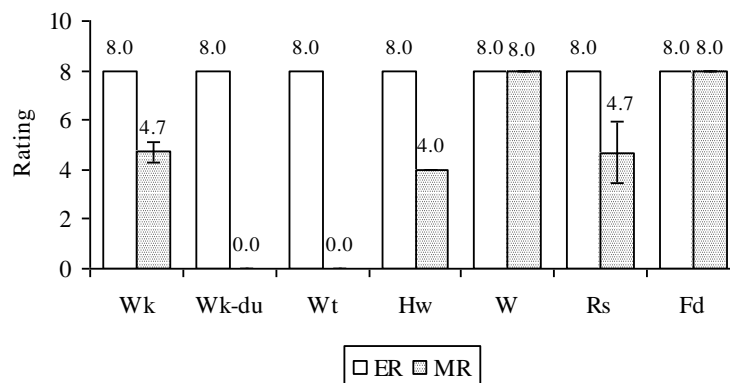
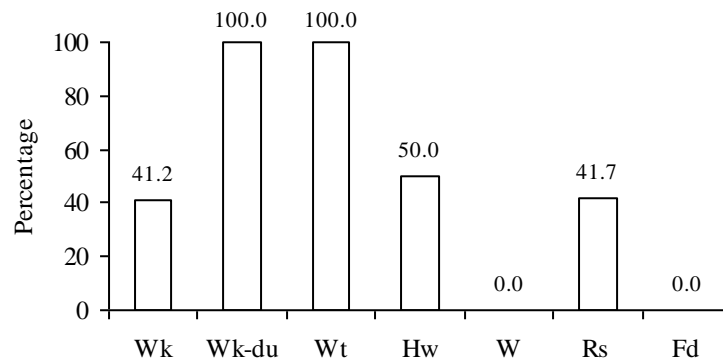


Figure 13a: Comparison of E-R and M-R for 'work' sub-parameters



Wk: Work type Wk-du: Work duration Wt: Weight carried Hw: Howdah type
W: Water availability Rs: Rest availability Fd: Food availability

Figure 13b: Percentage wise deviation from E-R for 'work' sub-parameters

Food

A wide variety of plant species and plant parts are eaten by wild elephants (Sukumar, 1991); foraging forming a major activity of the elephants. In captivity this maybe restricted in terms of variety and opportunity to forage in the forest.

- All elephants were allowed to forage as well as provided stall feed; foraging was limited to the period when they were worked (patrolling)/ or while being taken for fodder collection
- Stall feeding duration ranged from 3-8hrs; included fodder was *Hogla* (*Typha angustifolia*), *Prundi* (*Alpinia nigra*), *Nol* (*Arundo donax*), *Banaspati*, *Bhutta grass* (*Tripsacum laxum*), *malsa*, *Madhua* (*Saccharum arundinaceum*), *Khagra*, *Dhadda*, (*Saccharum narenga*) *Chepti* and cooked food such as rice, pulses, *jeera* (cumin seeds), *methi* (fenugreek seeds) and salt (See figures 14a,b,c and d for examples of food items given)
- Mineral mix was not given for any of the elephants
- Ration charts were maintained for 81% (N= 36) of the elephants



a



b



c



d

Figures 14a, b, c and d: Examples of types of food given for the elephants; elephant carrying one of its food items- Banana (a), mahout preferring food for elephant (b), mixer of banana stem and leaves (c and d)

M-R was 3.8 (SE= 2.0, N*= 5) with a deviation of 53% from E-R (Figures 15a and b).

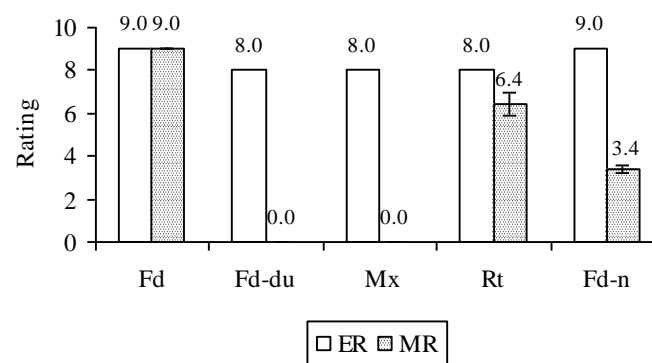
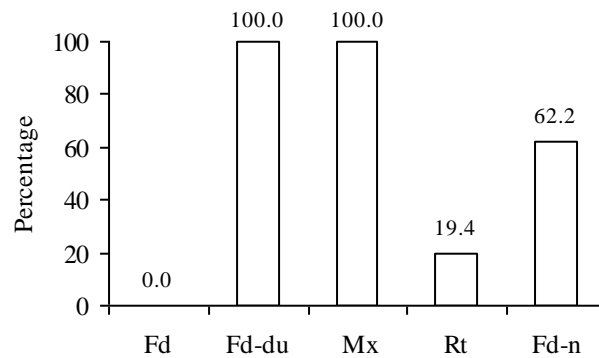


Figure 15a: Comparison of E-R and M-R for 'food' sub-parameters



Fd: Food provisioning type Fd-du: Feeding duration Mx: Availability of mineral mix
 Rt: Use of ration chart Fd-n: Number of stall-fed items

Figure 15b: Percentage wise deviation from E-R for 'food' sub-parameters

Reproductive status

In captivity, normal reproductive functioning maybe absent either due to absence of individuals of opposite sex or due to restrictions imposed on movement by chaining the animals or due to health/stress induced factors.

Female reproductive status

- Only two adult elephants were not exposed to males
- 18% of the observed females (N= 18) were not given opportunity to breed
- Mating had been observed for all the elephants provided with breeding opportunity
- Wild males were the male source for all the mating
- Number of calves born ranged from 0 to 8 per female; two premature births were reported for a 25y old female, both calves did not survive

M-R was 5.2 (SE= 0.7, N*= 5) indicating a deviation of 25.2% from E-R (Figures 16a and b).

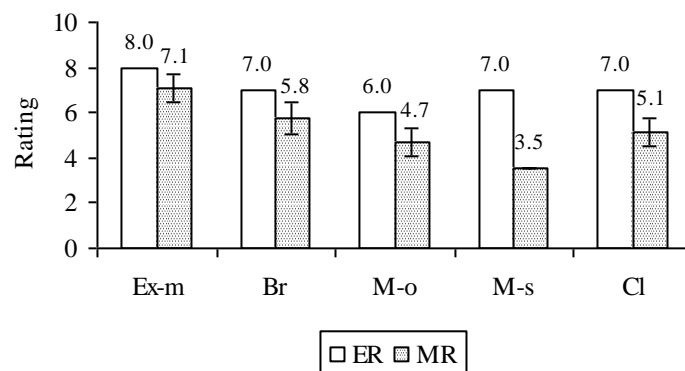


Figure 16a: Comparison of E-R and M-R for female reproductive status

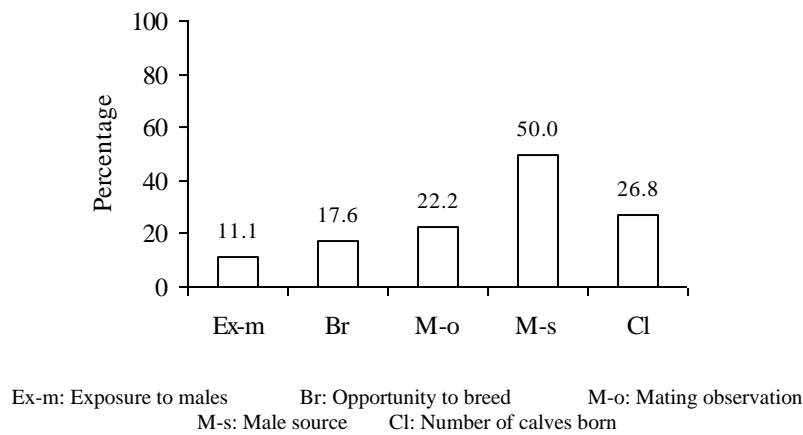


Figure 16b: Percentage wise deviation from E-R for female reproductive status

Male reproductive status

- None of the observed adult males was exposed to females (N= 10)
- None had sired any offspring
- Only one male of the eight (for which data was available) exhibited musth; had killed a person during musth

M-R was 0.3 (SE= 0.4, N*= 3) with a deviation of 95.8% from E-R (see Figures 17a and 7b for rating and percentage deviation from E-R respectively and Figures 18a,b,c and d as status of reproduction in captive elephants - lactating mother, calf with mother, adult males-potential source of breeding).

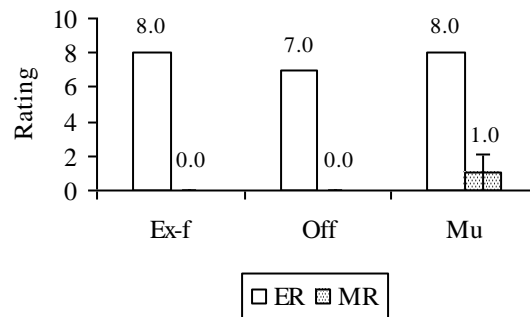


Figure 17a: Comparison of E-R and M-R for male reproductive status

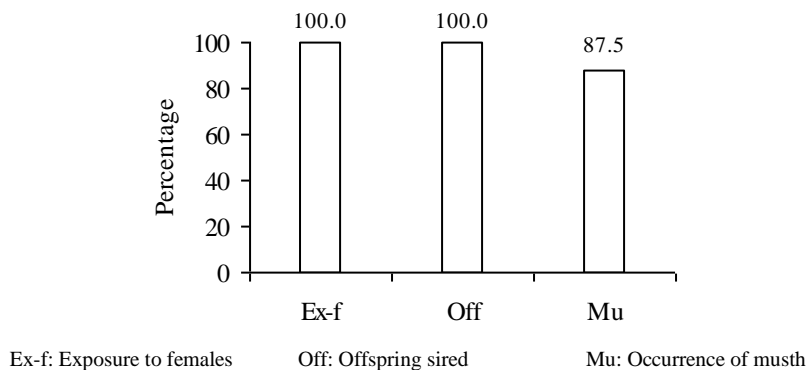


Figure 17b: Percentage wise deviation from E-R for male reproductive status



a



b



c



d

Figures 18a, b, c and d: Status of reproduction in captive elephants, lactating mother (a), calf with mother (b), adult males-potential source of breeding (c and d)

Health and veterinary schedule

A number of diseases and disorders have been observed and treated in captive elephants (Chowta, 2010). Proper veterinary practices need to be followed for health to be maintained.

- Foot problems such as toe nail cracks, foot rot, lameness, or arthritis was observed with foot problems (Figures 19a, b, c and d) noticed in 29% of the observed elephants (N= 41); gastro-intestinal problems were observed for a 50y old female elephant
- Deworming (annually) and immunization against hemorrhagic septicemia and anthrax was done for all observed elephants, except for a 3yrs old male
- Oil was not applied onto the elephant's body for 28% elephants (N= 39); frequency was weekly to 3-5 times a week
- Sample tests of dung/ urine/ blood was not done for any of the elephants
- Body measurements were taken annually for all elephants except a new-born calf and a 35yrs old female



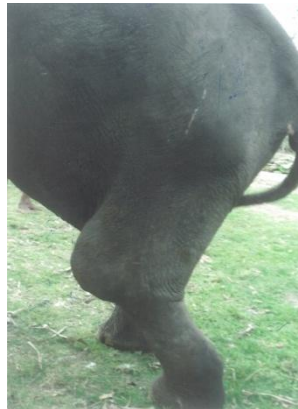
a



b



c



d

Figures 19a,b, c and d: Health status of captive elephants, status of foot (a and b), medical examination (c), dislocation of joint (Pattela-d)

M-R was 5.8 (SE= 1.0, N*= 8) with a deviation of 28% from E-R (Figures 20a and 20b).

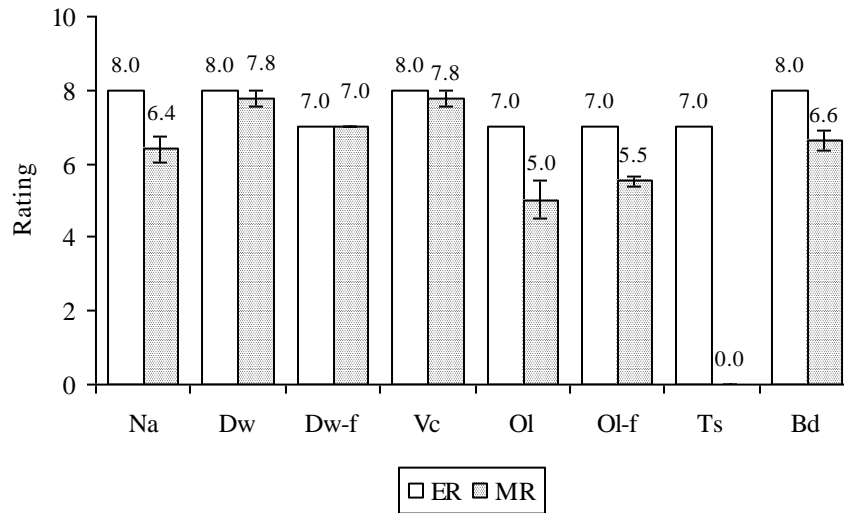


Figure 20a: Comparison of E-R and M-R for 'health and veterinary schedule' sub-parameters

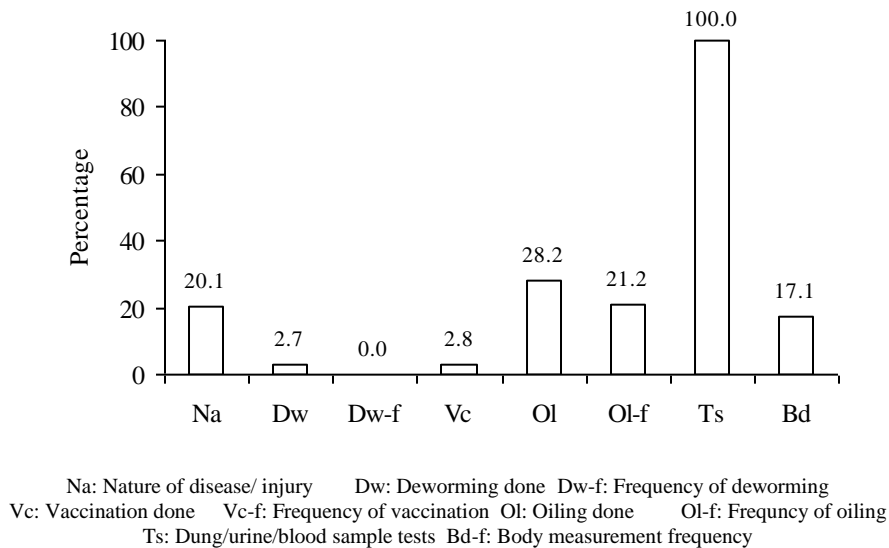


Figure 20b: Percentage wise deviation from E-R for 'health and veterinary schedule' sub-parameters

Veterinary personnel and facilities

Availability of veterinary personnel with relevant experience is essential in maintaining normal health of captive elephants. Insufficient or poor infrastructure can undermine efficient functioning.

- All elephants had access to a veterinary doctor who had 2yrs experience in treating elephants
- Frequency of visits was weekly
- Veterinary assistant was not available
- Records were maintained for all; frequency was annual except 7% (N= 42) of the elephants for which records were not updated

- Mobile veterinary clinic with minimum facilities was available; staff quarters, cooking shed, provisions shed were provided

M-R was 4.8 (SE= 1.2, N*= 8) with a deviation of 40% from E-R (Figures 21a and 21b).

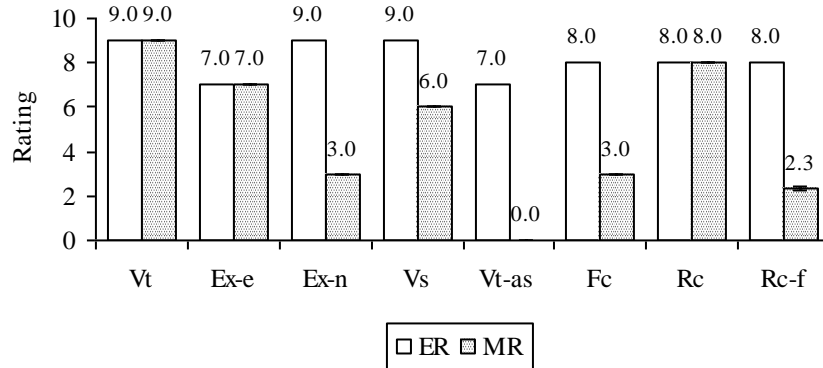
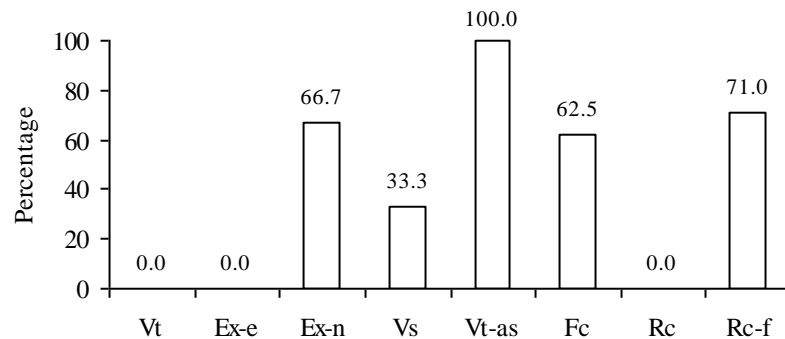


Figure 21a: Comparison of E-R and M-R for veterinary personnel and infrastructure



Vt: Availability of veterinary doctor Ex-e: Experience with elephants Ex-n: Number of years of experience
 Vs: Frequency of visits Vt-a: Availability of veterinary assistant Fc: Facilities available
 Rc: Record keeping Rc-f: Frequency of record keeping

Figure 21b: Percentage wise deviation from E-R for veterinary personnel and infrastructure

Handlers' experience and socio-economic status

Thirty-nine handlers (mahouts/cawadis) were in charge of 42 elephants, of which, six handlers managed two elephants each. Mean age of handlers was 34yrs (SE= 1.6, N= 39) ranging from 19-57yrs.

Professional experience

- Experience in this profession (Mean= 12yrs, SE= 1.4, N= 36) and with a specific camp elephant (Mean = 9yrs, SE= 1.2, N= 32) ranged from six months to 30yrs; Figures 22a,b,c and d show the profile of elephant mahout and Figure 23 show the Relationship between professional experience and experience with specific elephant in camp
- Forty two percentages of the handlers (N= 33) opted for this profession as a means of employment

- Eighty four percentage of handlers (N=37) used tools— metal ankush/ stick pike/ wooden ankush to control their elephants
- Number of elephants each handler had worked with ranged from 1-5
- The number of hours spent with respective elephant ranged from 8-16hrs



Figures 22a, b, c and d: Profile and age classes of elephant mahouts

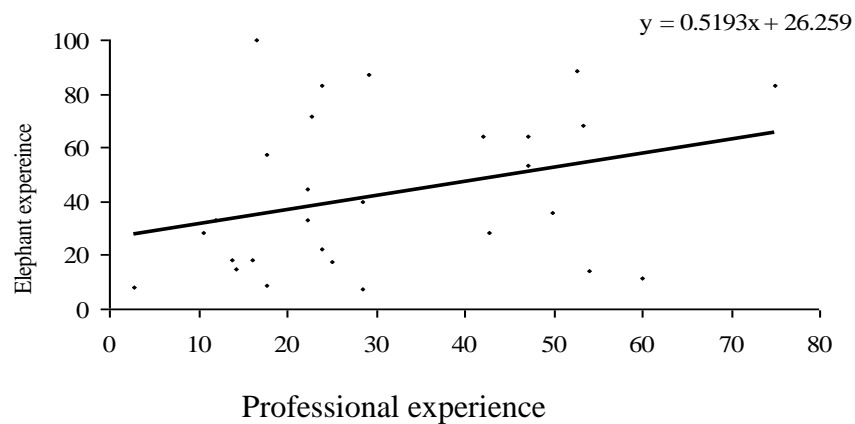


Figure 23: Relationship between professional experience and experience with specific elephant in camp

M-R was 6.1 (SE= 1.0, N*= 4) showing a deviation of 32.1% from E-R (Figures 24a and 24b).

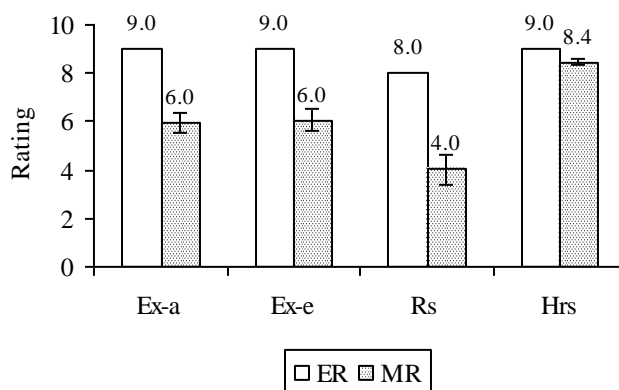
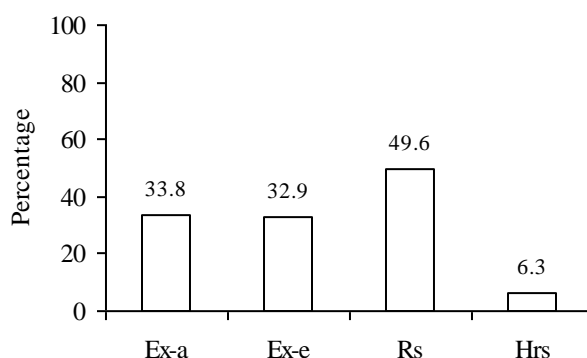


Figure 24a: Comparison of E-R and M-R for handlers' professional experience



Ex-a: Experience as percent of handler age
Rs: Reason for choosing this profession

Ex-e: Experience as percent of elephant age
Hrs: Hours spent with elephant

Figure 24b: Percentage wise deviation from E-R for handlers' professional experience

Socio-economic status

- Seventy two percentages of handlers (N= 36) did not have relatives working in this profession
- Family occupation for 84% of handlers (N= 37) did not involve elephant care/maintenance
- Sixty seven percentages of handlers (N= 18) were educated, none had studied upto the 10th class
- Mean annual salary drawn was Rs.34, 000; ranging from Rs.16,800 to Rs.84,000/- Figure 32 gives the association between professional experience and annual salary.
- Number of children per family ranged from 1-5
- Number of languages known to read/write/speak ranged from 1-3
- Fifty six percentages of handlers (N= 34) were not covered by insurance; insurance coverage was provided by an NGO

- Sixty one percentage of the handlers(N= 38) consumed alcohol; most was consumed after work

M-R was 3.4 (SE= 0.7, N*= 9) indicating a deviation of 51.1% from E-R (Figures 25a and 25b).

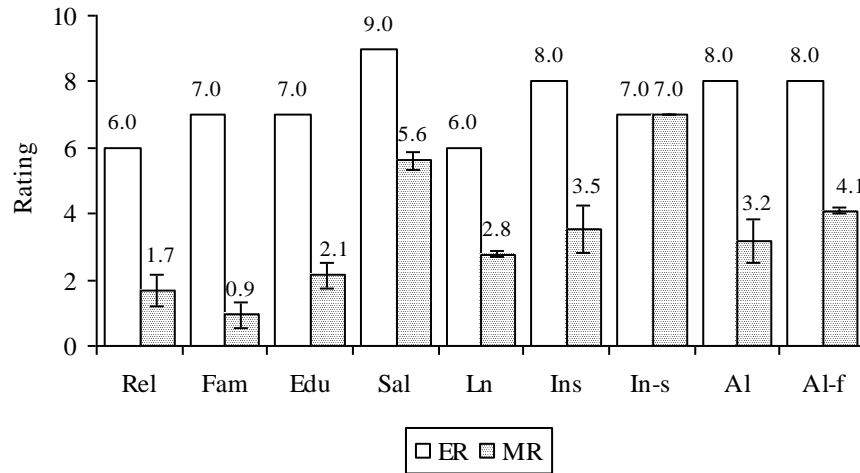


Figure 25a: Percentage wise deviation from E-R for handlers' socio-economic status

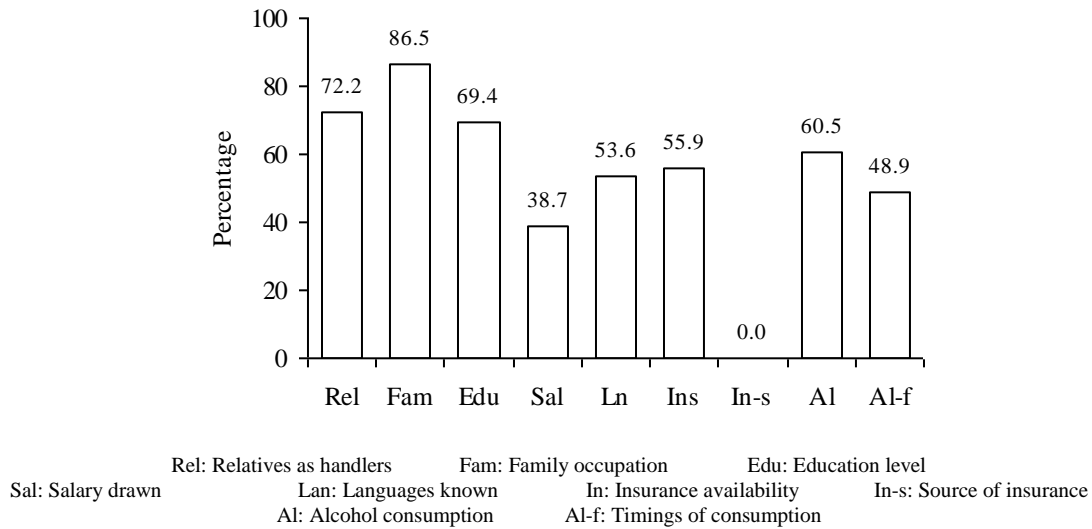
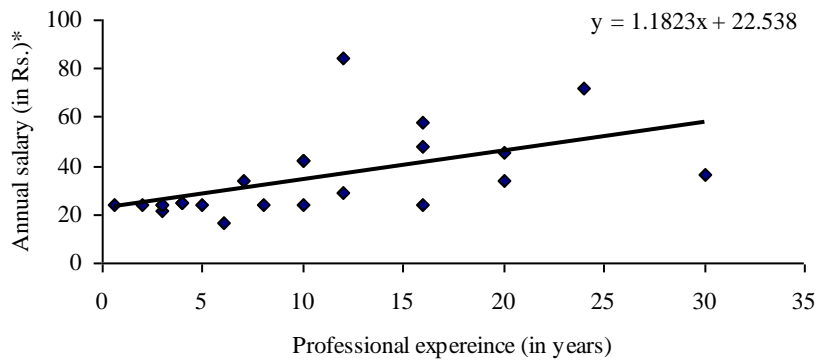


Figure 25b: Percentage wise deviation from E-R for handlers' socio-economic status

Figure 26 show the relationship between professional experience and annual salary



*: Salary in thousands

Figure 26: Relationship between professional experience and annual salary

Overall welfare status

Overall M-R, considering all observed sub-parameters together, was 4.3 (SE= 0.5, N*= 64) implying a deviation of 42% from E-R. Figure 26 gives the distribution of Percentagewise deviation across all observed sub-parameters. 42% of all parameters (N*= 64), across physical, social and reproductive features, showed a deviation of 50% or more from E-R.

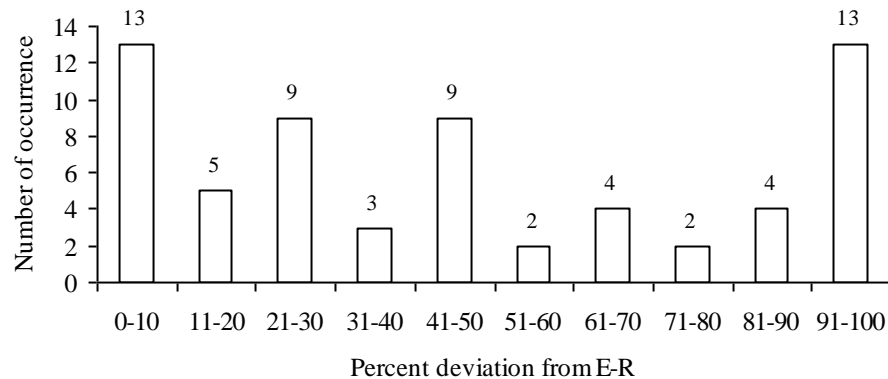


Figure 27: Distribution of Percentagewise deviation from E-R across all observed sub-parameters

Discussion

Maintaining elephants in captivity enforces a set of conditions for the animals, conditions which are determined by people. These conditions may or may not be suitable for the elephants. Thus, welfare of such elephants will be compromised when their living conditions are not suitable.

The deviations in living conditions experienced in captivity, from those in the wild, in terms of ability to engage in species-typical behaviours will result in poor welfare for the elephants. This aspect was rated for the elephants in this camp.

Features which were not conducive to elephants' welfare in the camp were:

- The practice of chaining elephants was one major aspect impinging on all other captive conditions of the elephants. The elephants were in a physical environment

that was suitable for them (wild elephants occurred in this area), but this was not available to the captive elephants due to chaining of the animals when not working. Their effective shelter size and ability to move freely was thus restricted to the area prescribed by the chain length. None of the elephants was allowed to free-range at night;

- The availability of rivers/ streams was utilized for bathing the elephants, but water sources could not be used by the animals on their own accord as they were provided tap water while in the camp
- Information on social interaction was restricted to younger elephants only: of the 17 elephants with opportunity to interact, 76% were elephants less than 10y old. Less than 10y old elephants formed only 33% of the group in this camp.
- Stereotypic behaviour was observed in equal proportions among male and female elephants
- While use for work in near-natural conditions was commendable, females with calves less than a year old were also worked for patrolling / providing tourist rides. This would imply the calves would be essentially made to walk during the work period without recourse to suckle from their mothers/ take rest when needed.
- Given the availability of natural fodder in the forest area, none of the elephants was reported to be allowed foraging opportunity in the form of free-ranging to browse/graze, the elephants grazed/browsed while being walked during work or for fodder collection; this would have ensured performance of species-typical activities at least during the duration of free-ranging and helped provide greater variety of feed for the elephants
- Reproductive success among the female elephants was nearly 100%, only three adult females (> 15y) had not contributed to calf-birth. This was also borne by the source of captive elephants in the camp with 68% (N= 41) elephants being born in captivity. However, only wild males were the male source for all the females. This, despite presence of males in musth in the camp. This was because of the practice of chaining all the elephants when not being used for work. Thus, even if reproductively active males were present they could not access the female. A newspaper report (The Telegraph, December 9, 2009) mentions the attacks from wild males on the male elephants in this camp, a male having reportedly died following injuries inflicted by the attacks. The practice of chaining the elephants would not only expose males to attacks from wild males, but also reduce the genetic variability available in the form of the captive males.
- The camp was home to 15 pairs of mother-offspring elephants, which is a commendable feature. There were, however, mother-offspring pairs that were broken due to shifting of either the mother or the offspring to a different location.
- Absence of the practice of sampling dung/ urine/ blood for various physical or biochemical tests

Handler status

- Mahouts/ cawadis came from a background which did not deal with elephants, implying new entrants into this profession
- Insurance cover was not available to all handlers, it was restricted to 44% of the handlers

- Alcohol consumption was observed among more than half of the mahouts/ cawadis

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Project Team

Field investigator/s

Dr. Naveen Pandey

Research Team

Ms. S. R. Sujata

Compassion Unlimited Plus Action (CUPA)

Dr. Roshan K Vijendravarma

Post Doctoral Researcher, Department of Ecology and Evolution,
University of Lausanne, 1015-Lausanne
Switzerland

Editorial and layout support

Pooja, Bangalore &
Ramesh Belagere, Bangalore

Adviser

Prof. R. Sukumar

Centre for Ecological Sciences, Indian Institute of Science, Bangalore 560 012

Co-Investigators

Mrs. Suparna Baksi-Ganguly & Dr. Shiela Rao

Compassion Unlimited Plus Action (CUPA),
Veterinary College Campus, Hebbal, Bangalore 560 024, &
Wildlife Rescue & Rehabilitation Centre (WRRC),
Bannerghatta Biological Park,
Bangalore – 560083

Principal Investigator

Mr. Surendra Varma

Asian Elephant Research & Conservation Centre (A Division of Asian Nature Conservation
Foundation (ANCF)), Innovation Centre, Indian Institute of Science, Bangalore 560 012

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 may 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 the 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 fora.

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.

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In West Bengal captive elephants are kept in Forest Camps and Circuses. About seventy percentages of elephants that belong to forest department are kept in Jaldapara Wildlife sanctuary. Elephants belonging to circuses are usually not stationed in this state and difficult to sample them. It is assumed that investigation on captive elephants in Jaldapara Wildlife Sanctuary may reflect the overall status of captive elephants of the State. Forty-two captive elephants from the sanctuary (Jaldapara) were observed to assess the welfare status of elephants. Welfare has been measured by comparing captive conditions with those observed in the wild in terms of the physical, social, psychological, reproductive and health aspects.

