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An Investigation of the Population Status, Management and Welfare Significance

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PREFACE

The group of elephants in captivity in the Punjab region is a unique sub-group of captive elephants that are commonly found in temples, circuses, zoos, etc. It is distinct because traditionally captive elephants were never a part of the popular public culture of western India, unlike in southern or eastern India.

Elephants in captivity and their mahouts drifted into the Punjab area from Bihar and Uttar Pradesh. Surprisingly, to date, the Punjab Government has not issued any ownership certificates to the owners, thereby rendering as illegal the possession of elephants in the state. Application papers filed by the elephant owners in 2003 have not received any response from the state government.

Elephants in captivity in Punjab have rarely been studied for their management or upkeep. They are an unknown group of animals in an unlikely place in an unsuitable environment. This study will hopefully help dispel some of the ignorance as to the actual keeping and husbandry of these elephants; though similar in the general pattern of elephants used for begging and blessing, have some differences in terms of management and usage.

ACKNOWLEDGEMENTS

EXECUTIVE SUMMARY

Owners and mahouts, as individuals or members of organizations 'owning' elephants, wander with them from place to place for monetary returns for their efforts.

There are 17 elephants in Punjab. This report assesses the status of their welfare in the city of Ludhiana as to their physical, social and health conditions along with issues related to their management.

Ten elephants, in the possession of seven private individuals as per the records of the Department of Wildlife Ludhiana, were observed, and their keepers/managers were interviewed to collect relevant data. A number of parameters related to the animals' captive situation was observed and recorded. Observations through interviews with handlers were also noted. The parameters were rated on a scale of 0–10, 0 representing bad welfare condition and 10 satisfactory.

Ratings of 83 parameters (inclusive of sub-parameters) for the elephants and 13 for the handlers have been presented. Related parameters are grouped together to provide an overall rating for that feature.

The elephants are, to a greater part, housed in a slum under a flyover in the city of Ludhiana. Hygiene in the animal shelter is poor with dung and urine accumulating at the tethering sites. Overall rating for shelter is 1.3, reflecting its gross unsuitability for housing the elephants.

Municipal taps are used as a source of drinking water for the animals. There is no access to a perennial source of running water, e.g. river or lake. Bathing the elephants is irregular depending upon the availability of water. Bathing places vary depending upon the station where the elephant performed at a particular point of time and on the availability of water in the specific area.

Availability and access to water are of great importance to elephants, especially to maintain body temperature and proper physiological functioning following intake of food. Overall mean rating for water-related parameters is 1.4, with all the ratings being less than 5.

Rest is a rarity and its duration is also random, and depends on the work type. This parameter is rated across seven sub-parameters. Overall mean rating is 4.6, with 72% of the ratings getting a score less than 4.

The elephants are made to walk on tarred roads to participate in ceremonies, commercial events and political rallies. Rating for this parameter is 3.0. Elephants' feet are sensitive to hard surfaces. They are sometimes made to walk between 20 and 60 km a day on tarred roads. Mean rating for walk and related parameters is 2.0.

Social interaction is a feature of primary significance, considering the complex society and social structure of elephants in the wild. They are tied together under the flyover at night, which restricted interaction.

Elephants stationed in Ludhiana that move around in rural areas for alms, to participate in marriage functions and other religious and social ceremonies. Ludhiana's mean monthly temperatures are 35–40°C, peaking at 45–46°C in summer. The elephants work upwards of 12 h a day often without any shade, water or food.

We had encountered an elephant walking from Daudpur, 60 km from Ludhiana, having started the journey at 4 a.m., to reach Ludhiana city at 4 p.m. It covered the distance without any food, water or rest. One female elephant, Laxmi, apprehended with her mahout, in April'08 had an abscess on her leg and had difficulty in walking. She was brought from Haryana to Punjab to participate in a function, and was later kept at the local zoo for treatment. It was later released to her 'owner', who had no ownership documents.

Elephants are used in religious processions, rides for children, and for product advertisement and are walked around or transported to other districts and states to participate in marriages and functions. Overall mean rating for work-related parameters is 1.7 with 82% of the scores getting a rating below 3.

The animals are put to work irrespective of the ambient day temperatures. Physical exertion of walking or standing in the sun increases body temperature. At night, the animals are rested under concrete structures in urban and densely populated areas.

The heat generated in the body by physical exertion during the day is not allowed to dissipate easily due to the surrounding micro-environment of concrete walls and absence of vegetation. Additionally, the restriction imposed by chaining the elephants further hinders the animals' ability to choose a suitable place within a restricted environment.

The general health of the animals is an indicator of the status of their welfare. Poor health or frequent occurrence of injuries is observed and is associated with poor living conditions. The mean for health status is 2.6 with 83% of the ratings occurring in the range 0–4.

The overall ratings for elephants, across each individual value and all parameters, is 2.4 implying bad welfare conditions.

RECOMMENDATIONS

Private elephants have been around in Punjab for a long time without any defined legal status. There is a need for the Forest Department of Punjab to take an unambiguous and clear stand on the presence and possession of captive elephants by individuals for commercial purposes. If possession is granted, then elephants need to be micro-chipped and their handlers/ mahouts given Ownership Certificates (OC). This is important since the elephants presented in this study did not have any papers pertaining to ownership, despite their reported presence in the current location for at least ten years. However, under Section 42 of the Wildlife Protection Act (1972), if the OC is granted, then it may well be challenged since none of the conditions of "upkeep, maintenance and housing" are met by the parties who use the elephants. If the OC is not granted, then the animals should be confiscated by the Wildlife Department as illegal possession of a Schedule 1 animal, and as per the WLPA, the so-called 'owners' are liable for prosecution.

Corrective steps need to be initiated urgently to improve the welfare of the elephants in Ludhiana.

The first step to recognize the legal status of the animals and to improve their welfare and of the owner- mahout families is to create a model of elephant keeping that would benefit both the elephants and the humans who use them as a source of livelihood. The following approach could be adopted:

> The Department of Wildlife of Punjab could be encouraged to start an Elephant Park and Conservation Centre (EPCC) as part of an eco-tourism project in the Tiger Safari area in the Kadiyan Forest Range of Ludhiana. Ten elephants could be leased from the present owners who use the animals for their livelihood against a designated monthly sum payable to them. This would give the owners a clear signal that the Government is interested in elephant and mahout welfare as well as that of the elephant. If they do not comply with the directions, they could lose links with the elephant and the monthly lease compensation of such a model. This kind of a revenue generating and self-sustaining model will succeed in giving a better life to the community. It will improve the welfare of the animals considerably by providing natural and healthy surrounding, with basic needs like water, diet, shade, veterinary care and interaction with other elephants fulfilled.

> Each family member can be given a job as a mahout against a government-approved salary. Simple mahout quarters can be provided with basic hygiene in place. Insurance cover for elephant and mahouts should be purchased by the govt.

> The EPCC could be thrown open to the public, against ticket money, to watch and enjoy elephants in their natural habitats-feeding, playing, bathing, mud-play and wallowing without chains and within a suitable enclosure. The welfare of the elephants should be an uppermost concern while designing or allocating such a habitat.

- The current elephants could be micro-chipped (with NGO participation, for additional assistance) and all new arrivals in the State should be banned, since the dry climate and extreme temperatures are not conducive for elephant keeping.
- The current age estimated for these elephants is 35-45 years. They are likely to survive another 20 years. Therefore, the Government has to make provision for their welfare in the budget for this period. When the elephant dies, the monthly lease amount would cease and the mahout could be compensated from a proposed insurance amount.
- Government, as a stakeholder in this unique conservation and welfare measure, should take assistance from NGOs active in the field. This kind of collaboration could become a model for the rest of the country to follow. The agency created should monitor the EPCC, and send regular reports to the concerned forest officers.
- Mahouts be re-trained by trained grouped for better care of the elephants.
- Public awareness building, measures be undertake to discourage the use of elephants in activities like begging, racing, etc. Such activities generally involve harsh training schedules for the animal and are not part of their natural repertoire. The 'owners'/ guardians of the animals should be prevented from overexploiting them for commercial gains.
- Currently, the elephants are made to walk on major city roads and highways like GT road. Two years ago a speeding truck in Sangrur district collided with an elephant resulting in painful death. Elephants should be prevented from being walked around on major roads as it is unsafe for them, the mahout and the general public.

Introduction

The use and maintenance of elephants for public performance, though not in the category of circuses, is a well-established fact. Elephants 'owned' by individuals or organizations are taken from place to place to earn a living. The ownership of such elephants is more often than not unsubstantiated. The natural environment—physical, social and psychological—experienced by wild elephants varies from those of captive situations. The abominable conditions where the elephants are confined to affect their well-being. The animals are maintained under varied conditions of captivity, most of which are not monitored on a regular basis. There are 17 elephants in Punjab, of which about 10 are in Ludhiana. This report aims to assess the welfare of elephants observed in the city in terms of their physical, social and health conditions along with management issues.

Method

Ten elephants, belonging to seven private owners, were observed and their keepers/managers were interviewed to collect relevant data. A number of parameters related to the animals' captive situation were observed and recorded as also through interviews with handlers. The parameters were rated on a scale of 0–10 with zero representing bad welfare condition and 10 considered satisfactory.

Ratings were graded in the following manner:

• 0–2.4: bad conditions
• 2.5–4.9: poor
• 5.0–7.4: moderate
• 7.5–10.0: satisfactory

Ratings for 83 parameters (inclusive of sub-parameters) for the elephants have been presented. Thirteen parameters for mahouts/cawadis have been rated. Parameters that were related were grouped together to provide an overall rating for that feature. For example, shelter included such parameters as type, size, flooring, number of hours enclosed within and open or closed type. The socio-economic conditions of the elephant handler were rated in terms of observations collected on relevant parameters as a means of assessing his welfare status. In addition, the experience of the handler was also considered. The rating scale for mahout/cawadi remains the same. High ratings imply suitable economic, social and other living conditions.

Result
Population status

All the animals were females, with mean age of 38.2 years (S.E. = 2.5, %CV = 14.6, N = 5) ranging from 30 to 45 years.

Source of the animal

The few elephants with valid papers at the present location have been bought from Sonepur in Bihar. None of the elephants had any authorization papers from the Punjab State Forest Department and certainly no documents pertaining to the Central notification of 2003 and its extension of 2004, to revalidate the old Ownership Certificate, if any or declare possession of the animal, as per the guidelines of the Wild Stock Rules 2003, of the WLPA. However, the elephants seem to have stayed at the present location for the past 10 years. Change in ownership

of an animal implies altered living conditions as a consequence of new management. This also pinpoints to the source of the captive population.

Shelter

The elephants were housed in about 450 sq. ft of concrete flooring under a flyover surrounded by slums (Figure 1a & 1b) in the city of Ludhiana. Dung and urine accumulates at the tethering sites, and hence hygiene of the shelter is very poor.

The housing condition of the animals is rated across seven sub-parameters. Low ratings signify existence of improper or unsuitable physical conditions. Overall rating for shelter is 1.3 (SE = 0.71, N=7) with 86% of the ratings being less than 5 (Figure 2 and 3).

Figure 1b: A view of the shelter, under a flyover.

Figure 1a: Another view of the shelter.
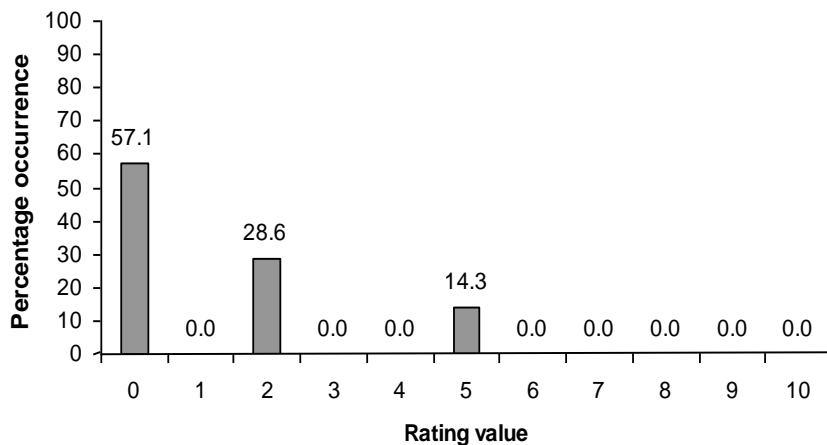
Figure 2: Ratings for shelter

High rating is given to natural/ near-natural forest conditions as they resemble the wild environment and to shelters which provide free-ranging opportunity under forest conditions. Mean rating for shelter size is 0.0 (SE = 0.0, N =10). Natural substrates provide suitable living environment. Low-quality flooring is given low rating.

Mean rating is 0.0 (SE = 0.0, N = 10). The enclosure or shelter, if closed, needs care with respect to maintenance of ideal temperature, especially considering the elevated body temperatures of working

Figure 3: Unnatural and unhygienic flooring.

elephants. Cleaning the premises (see Figure 2) is important as uncleared animal excreta leads to health problems both for the animal and the general public. Mean rating (Figure 4) is 2.0 (SE = 0.0, N = 10).
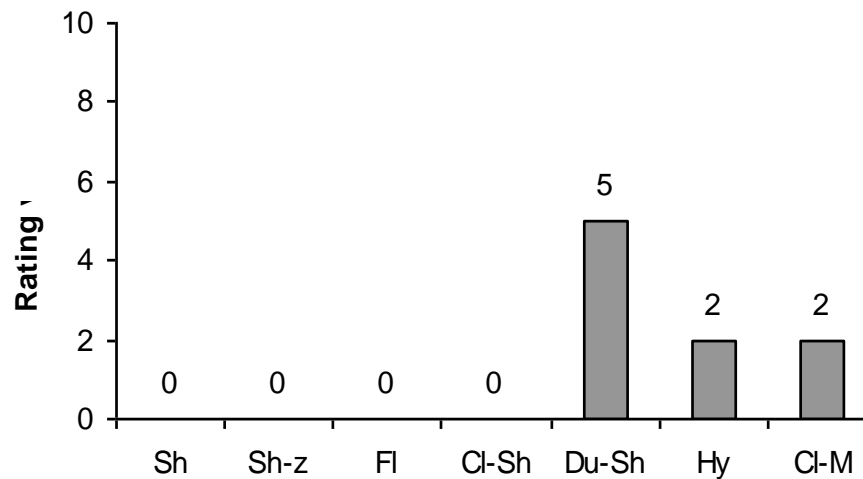
Sh: Shelter type   Sh-Z: Shelter size
Fl: Floor type   Cl-Sh: Type of closed enclosure
Du-Sh: Duration animal kept in shelter   Hy: Hygiene of shelter
Cl-M: Cleaning materials used

Figure 4: Ratings for shelter and associated parameters.

Water availability

There is no access to a perennial source of running water (Figure 5). Tap water is used as a source for drinking. The animals drink water thrice a day. Bathing depended on the availability of water and is irregular. Water is provided by villagers occasionally through pipes when the elephant is hired. Places for bathing depended on the place where the elephant is at that point of time and on the availability of water. Scrubs are not used, but coconut fiber is used occasionally for scrubbing.

Figure 5: Elephant being washed with pipe water.

Access to water is of immense importance to elephants to maintain body temperatures and proper physiological functioning. This parameter has been rated across nine sub-parameters. Overall mean rating is 1.4 (SE = 0.6, N = 9) with all the ratings being less than 5 (Figure 6).
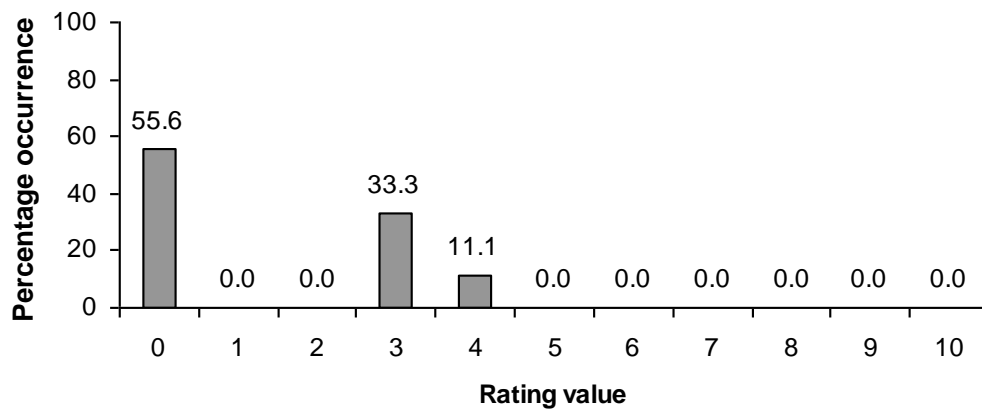
Figure 6: Ratings for availability of water.

Access to running water throughout the year is considered important as stagnant water could lead to contamination and unhygienic conditions for the elephant. Mean rating is 0.0 (SE = 0.0, N =10) implying use of stagnant water source.

Ease of access to water by the animal is considered important in giving high rating for this parameter. Rating value is 3.0 (SE = 0.0, N =10). Elephants consume around 150 l of water per day (BIAZA, 2006), 160 l per day (Poole and Granli, in press). Any deviation from this is given a lower rating. Mean rating is 4.0 (SE =0.0, N =10). Since water is not tested for quality (Figure 7). The mean rating for quality is 0.0 (S.E= 0.0, N =10).

Bathing place

Elephants need enough water to immerse themselves completely and to allow for related activities such as mud wallowing, dusting, etc. (BIAZA, 2006). Mean rating is 0.0 (SE =0.0, N=

10). Materials such as plastic brush or brick which are hard and are abrasive have been given lower rating values. Use of natural materials is given a high rating.

Pr-W: Perennial source of running water   S: Water source
Ds: Distance to water source   Q-Dr: Quantity of drinking water
W-Ql: Water quality tests   Bt-N: No.of times bathing/day
Bt-p: Bathing place   Bt-Du: Bath duration
Bt-M: Bathing materials used
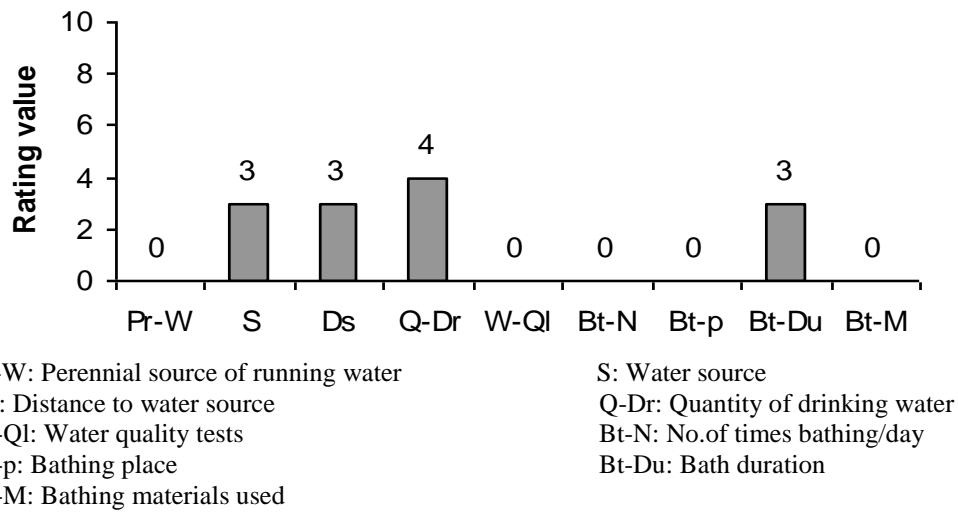
Figure 7: Ratings for water sub-parameters.

Rest and sleep

The working animals are rested only rarely. The duration of rest depended on the work type and is random in nature. Resting place is also random depending upon the location of the elephant during its working hours. When not on duty, the animals are allowed to sleep at night for about three hours a day in their shelter under the flyover.

Allowing elephants sufficient rest and sleep would help in maintaining their physical and psychological well-being. This parameter is rated across seven sub-parameters. Overall mean rating is 4.6 (SE = 1.4, N = 7) with 72% of the values getting a score less than 4 (Figure 8).
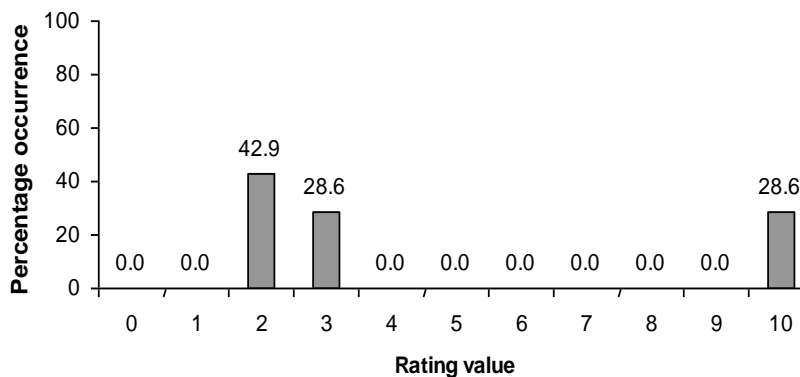
Figure 8: Ratings for rest and sleep.

Opportunity for rest

The fact that elephants are used for work makes it all the more important to provide them sufficient rest. Mean rating is 2.0 (SE = 0.0, N =10) showing poor availability of rest for the observed animals. Unsuitable sleeping places are given low ratings (Figure 9). Mean rating is 3.0 (SE =0.0, N =10) as the animals sleep under urban structures.

Rs: Rest availability   Rs-Hr: Resting hours/day
Rs-p: Resting place   Sl: Sleep availability
Sl-p: Sleeping place   Sl-sz: Sleep area size
Sl-Du: Duration of sleep
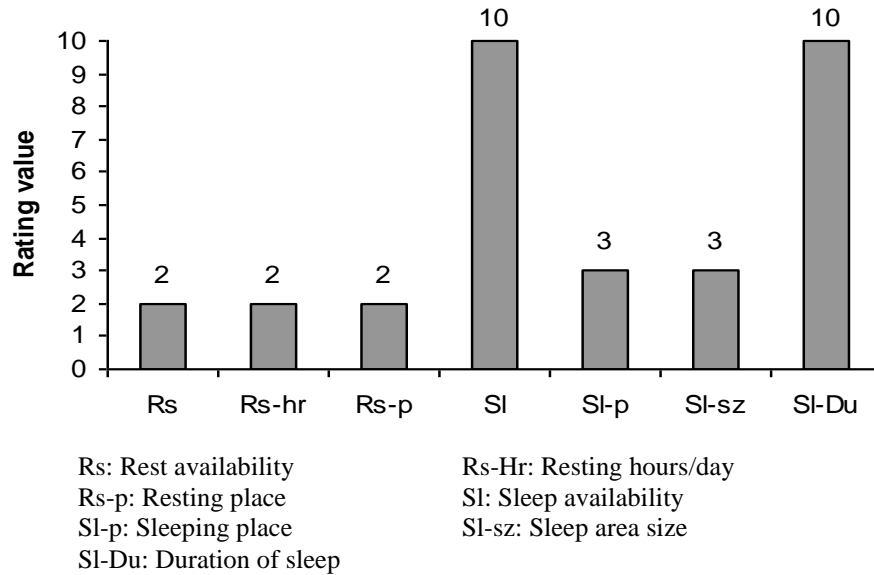
Figure 9: Ratings for rest/sleep sub-parameters.

Opportunity for physical exercise

The animals are walked on tarred roads for 8–12 hours (Figure 10) over 20–60 km a day from 4 a.m. to 4 p.m/8 a.m. to 5 p.m. This parameter is rated using six sub-parameters. The mean rating is 3.0 (SE = 0.52, N = 6) with 67% ratings getting a score less than 4 (Figure 11).

Figure 10: Elephants walked around on tarred roads.
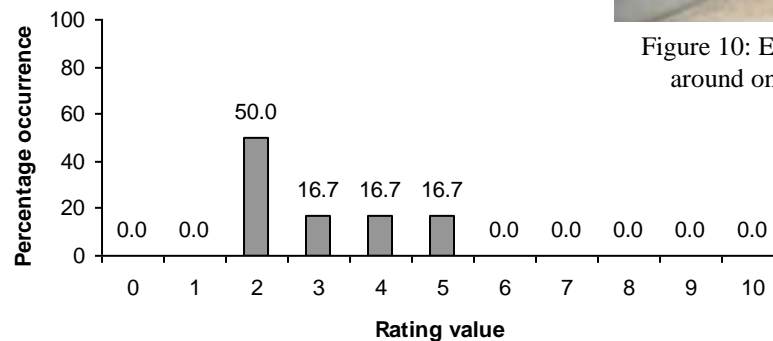
Figure 11: Ratings for walk.

The elephants are generally walked in an urban environment to participate in ceremonies. Rating is 3.0 (SE = 0.0, N =10). Elephants' feet are sensitive to hard surfaces (Rajankutty, 2004). The observed animals are made to walk on tar roads (Figure 12) which hurt their feet. Hence, a rating (Figure 12a) of 2.0 is assigned (SE = 0.0, N =10).
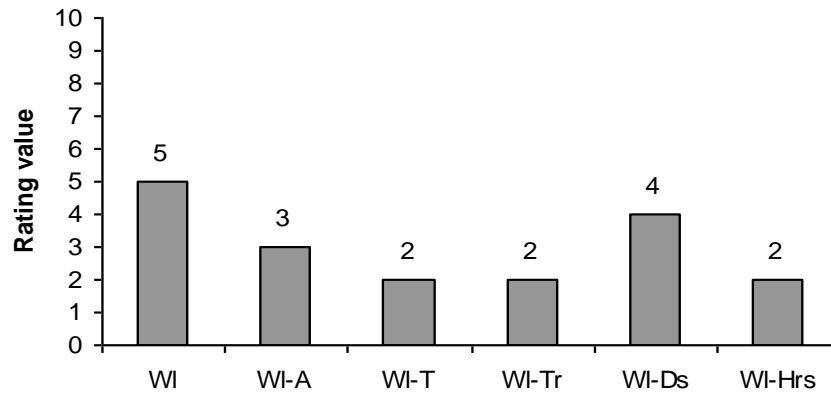
Wl: Allowed to walk   Wl-A: Area (size) of walking
Wl-T: Time of walking   Wl-Tr: Walking terrain
Wl-Ds: Distance covered while walking   Wl-Hrs: Duration of walking

Figure 12: Sub-parameters of ratings for walk.

Social interaction

The elephants are tied together at night with a meter length of chain under the flyover or made to walk together while traveling (Figure 13), which allows for extremely restricted interaction. Interaction is among 2–3 adult female elephants, and only among animals tied together. Distance between elephants is 1–2 m. Social interaction among the animals is a feature of significance considering the social nature of elephants in the wild. Overall rating for this parameter is 5.0 (SE = 1.3, N = 5) with 60% of the values (Figure 14) getting a score less than 5.

Figure 12 & 13: Source of interaction.
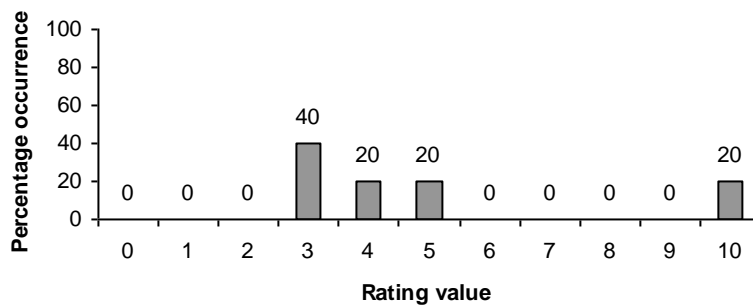
Figure 14: Overall rating for social interaction.

The mean rating for interaction among elephants is 10.0 (SE =0.0, N =10); however, the mean rating value for group size (Figure 15) is 3.0 (SE = 0.0, N = 10.0).
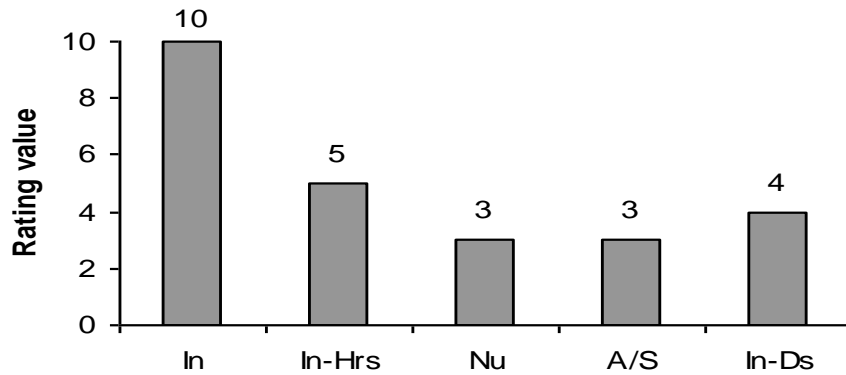
In: Allowed to interact or not   In-Hrs: Hours of interaction
Nu: Number of individuals   A/S: Age-Sex class
In-Ds: Interaction distance (between individuals)

Figure 15: Ratings for interaction sub-parameters.

Chaining
All the elephants are chained during the night for 8–12 h, approximately between 8 p.m.and 5 a.m. None of the animals is allowed to range free and is tied with 1–2-m long chain. Use of chains on captive elephants is a characteristic feature, restricting their movement. The rating allowing to range-free is 0.0 (SE = 0.0, N =10.0). Mean rating is 5.0 (SE =0.0, N = 10).

Observed behaviour
All the observed animals were calm. There were no incidents of aggressive behaviour towards the public. None of the elephants exhibited stereotypic behaviour. Captivity imposes a number of alien conditions on the life of animal. This might be expressed as abnormal behaviour by the animals. Behaviour was assessed using three sub-parameters. Overall mean rating is 10.0 (SE =0.0, N = 10) with all the observed elephants getting a rating of 10.0 for the three sub-parameters.

The behaviour of the animal was rated for signs of aggression/nervousness or any form of deviant expression. Mean rating is 10.0 (SE = 0.0, N =10) showing calm or quiet behaviour by all the observed animals. Low ratings are given for expression of aggression towards people/other animals. Mean rating is 10.0 (S.E = 0.0, N = 10) implying absence of aggressive behaviour. Mean rating for observed stereotypic behaviour is 10.0 (S.E. =0.0, N =10) with no observed stereotypic behaviour.

Work type
Animal Racing is held at Kila Raipur, about 35 km from Ludhiana, once a year in February. The Ludhiana elephants participate in it along with animals like camels and bullocks. Elephants are also engaged in political rallies as well as in temple processions (Figure 16 a), for begging (Figure 16ba & c), children rides and are also leased to sadhus.

Figure 16a: Elephant used in a procession.

Figure 16 b & c: Elephants used for begging.

The elephants are hired (Figure 17) for Rs.3, 500 per ceremony - (US$1=43.75), reportedly twice or thrice a month within the city limits. Begging fetches Rs.800–1000 a day, with nearly half of about 200 people assembled giving alms.

The elephants are used in religious processions by all sections of people— Sikhs, Hindus and occasionally by Jains —about 10– 15 times a year. Processions last about 5–6 h, usually between 2 and 8 pm. Child rides are for approximately 2–4 kids, each trip fetching Rs. 50–100. Elephants are also used for product advertisement by private companies; they are also hired by people in distant places on similar errands. Howdah used on the animal is made of bedding material and weighs about 30 kg. Availability of water during work is uncertain and when available varied between 50 and 100 l. This parameter is rated across eleven sub-parameters. Overall mean rating is 1.7 (SE = 0.6, N = 11) with 82% of the scores getting a rating below 3 (Figure 18).

Figure 17: Visiting card of an elephant owner with contact details for hiring elephants.
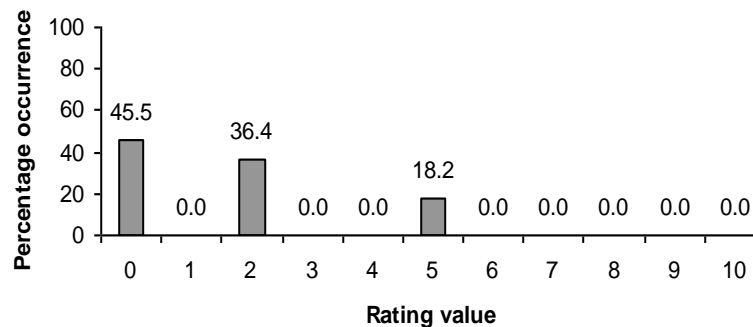
Figure 18: Ratings for work.

Any form of work that is alien to an elephant's natural way of life is given a low rating. Mean rating value is 0.0 (SE = 0.0, N =10). The physical burden carried by the elephants over long distances compounds the unfavorable conditions already being encountered. Mean rating value is 2.0 (SE = 0.0, N =10). Provision for shade while on the move or during work is of immense importance, considering the poor thermoregulation of the animal and increased body temperatures from physical exertion. Mean rating value for provision of shade during work is 0.0

(SE =0.0, N =10). Provision for water during work is given high rating value as the animals need to drink water during the course of a day. Mean rating value is 2.0 (SE = 0.0, N =10.0) which implies bad condition for water availability (Figure 19).
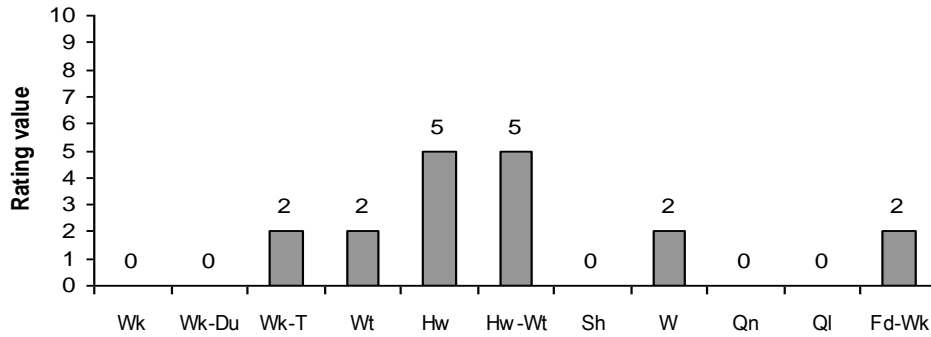
Wk: Work type
Wt: Weight carried during work
Sh: Shade available during work
Ql: Quality of drinking water

Wk-Du: Work duration
Hw: Howdah type
W: Water available during work
Fd-Wk: Food during work

Wk-T: Timings of work
Hw-Wt: Weight of howdah
Qn: Quantity of drinking water

Figure 19: Ratings for work sub-parameters.

Provision of food
The following food items are provided to the elephants at the shelter or while begging for alms depending upon availability and season—grass, 'bajra' (Pearl millet, *Pennisetum* sp.), 'jowar' (sorghum, *Sorghum* sp.), 'roti' also called chappatis (cooked wheat dough), sugarcane (*Saccharum* sp.), berseem (Clover-*Trifolium* sp.) fodder. About Rs.300 (US$ 6.8) is spent on food per day on each animal. The animal picks up grass along the way while walking and is also helped by caretakers with tree branches like those of banyan (*Ficus* sp.), peepal (*Ficus religiosa*), etc. Devotees offer banana, jaggery (sugarcane molasses), sugarcane and occasionally chapattis and 'ghee' (clarified butter). The food provided to the elephants indicates the restrictions on movement of the animal and implies absence of free foraging. Overall mean is 3.0 (SE = 1.2, N = 4) with 50% being less than 3 (Figure 20).
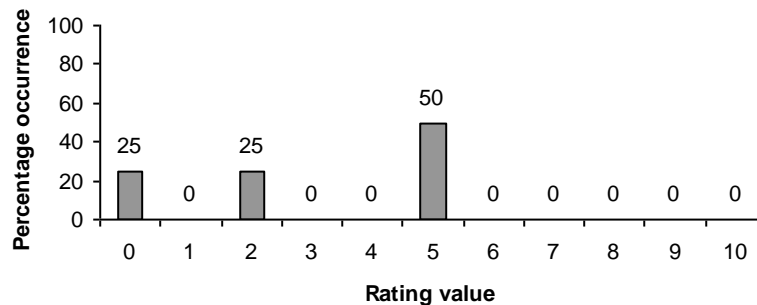
Figure 20: Overall ratings for food.

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Animals that are allowed to range free for browsing/grazing and provided stall feed are given high ratings. Mean rating is 5.0 (SE = 0.0, N =10.0) implying the use of only stall feed (Figure 21). The food chosen by the animal on free ranging in forest conditions cannot be replicated during stall feeding. Hence, a lower rating value is given for stall feed.

Fd: Food provisioning type   Fd-N: Number of food types
Fd-Ar: Feeding area   Rt: Usage of ration chart
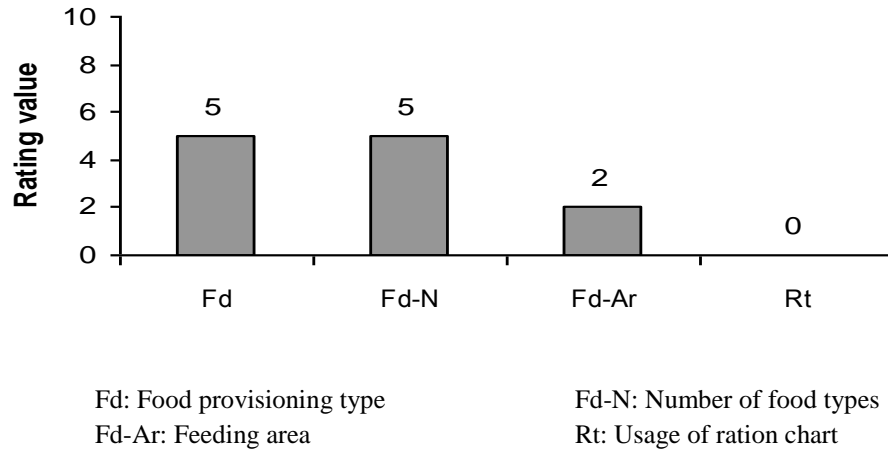
Figure 21: Ratings for food sub-parameters.

Reproductive status of females

Oestrus cycles have not been reported for any of the observed females. None of the animals was exposed to males or given an opportunity to mate. The occurrence of oestrus cycles in adult female elephants could be related to maintenance of normal health and psychological state. Overall mean rating is 0.0 (SE =0.0, N = 6, Figure 22) implying no opportunity to mate.
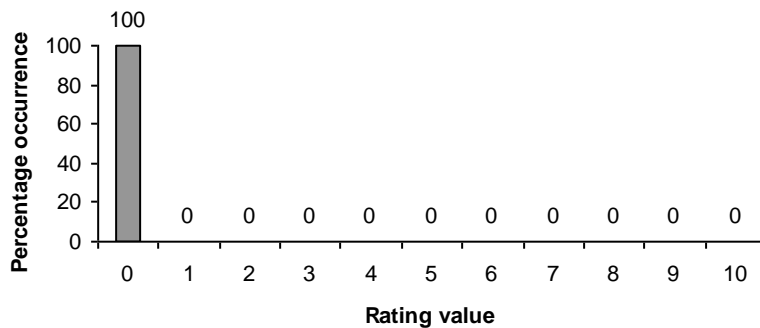
Figure 22: Overall ratings for female reproductive status.

Figure 23: Note pierced nail on the pad.

All the sub-parameters such as occurrence of oestrus cycle, exposure to males, frequency of exposure, opportunity to breed, male source for mating and number of calves born received a rating of zero.

Health status

All the animals have abscesses and nail cracks, one even having a nail penetrating into its pad (Figure 23). One 45-year old female

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elephant, Roopkali, has its left eye damaged. Four animals have been de-wormed. None of the elephants had been vaccinated against specific diseases. All the animals are oiled using mustard oil twice a week. Health of animals is considered to be an indicator of its welfare. Poor health or frequent occurrence of injuries could be associated with poor living conditions. Overall mean for health status is 2.6 (SE = 0.8, N = 8) with 83% of the rating occurring in the range 0–4 (Figure 24).
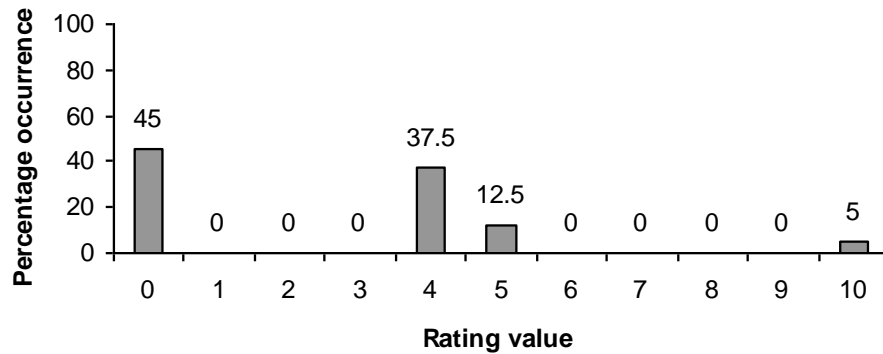
Figure 24: Ratings for health status.

Rating for the occurrence of disease or injury is 4.0 (S.E. = 0.0, N =10) with all the observed animals having disease/injury. Deworming status (Figure 25) of the observed animals is not uniform. Mean rating is 4.0 (SE = 1.6, N = 10). None of the observed animal had been vaccinated. Mean rating is 0.0 (SE = 0.0, N =10).
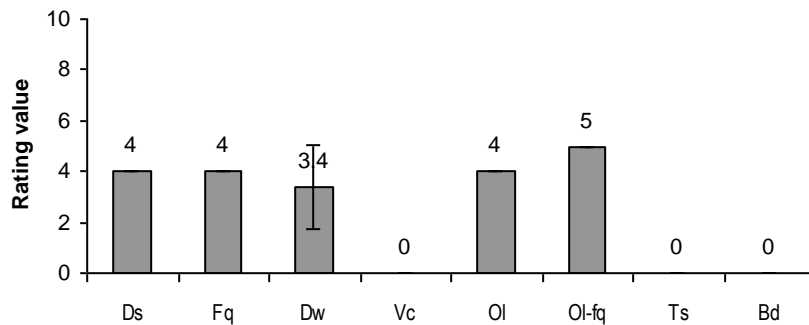
Ds: Occurrence of disease/injury   Fq: Frequency of disease/injury
Dw: Deworming status   Vc: Vaccination status
Ol: Oiling done   Ol-Fq: Frequency of oiling
Ts: Blood/dung/urine tests done   Bd: Body measurement taken

Figure 25: Ratings for health sub-parameters.

Veterinary care

No veterinary doctor is available. The mahouts usually treat the animal using traditional medicines. Otherwise, it is referred to the Government Veterinary hospital. Prescribed medicines are purchased by the owner. None of the doctors treating elephants had experience with this species. There is no provision for a veterinary assistant. Regular and timely veterinary care is important to maintain an animal's health. Overall mean rating is 0.88 (SE = 0.4, N = 10) with 88% of the values being less than 3 (Figure 26).
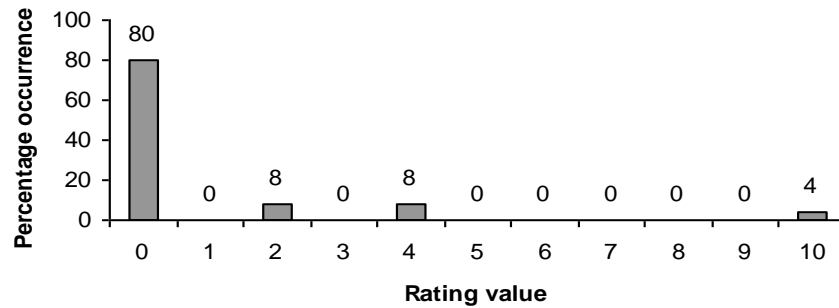
Figure 26: Overall ratings for veterinary care.

Treatment by veterinary doctors with experience in handling elephants is given high rating. Mean rating for availability of doctor is 0.0 (SE = 0.0, N = 10). Rating for experience with elephants is 1.6 (SE = 0.7, N =10) implying low level of experience (Figure 27) for most of the doctors. None of the observed animals had provision for any veterinary facility. Mean rating is 0.0 (SE = 0.0, N =10). Body measurements and sample testing of blood/dung/urine is not done for any of the animals. Record keeping (medical/service/clinical/other types) is absent. Rating for type of record keeping is 0.0 (SE = 0.0, N = 10) implying absence of records.
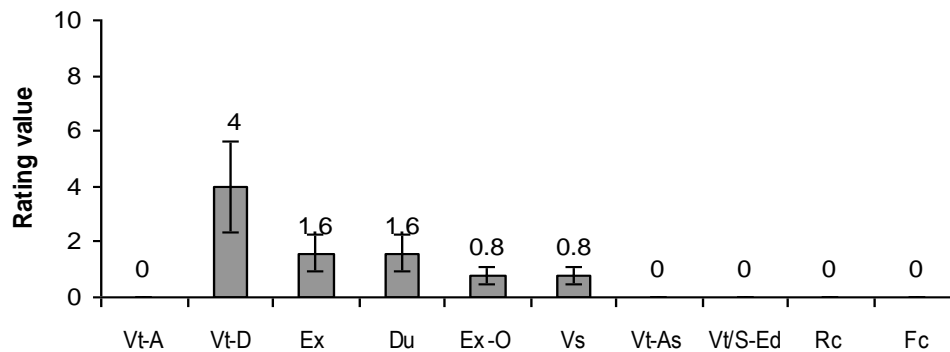
Vt-A: Veterinary care availability   Vt-D: Veterinary doctor availability
Ex: Experience in treating elephants   Du: Years of experience
Ex-O: Experience with other animals   Vs: Frequency of visits
Vt-As: Availability of veterinary assistant Vt/S-Ed: Qualification of Vet.Assistant
Rc: Record keeping type   Fc: Veterinary care facilities for elephant

Figure 27: Ratings for veterinary care sub-parameters.

Expenditure on animal
The 'owners' spend about Rs. 72,000 (about US$1636) on each animal per year.

Infrastructure
Provision of staff quarters, their condition, the status of howdah, maintenance of service/clinical records and record keeping type was rated to provide an indication of the resource use. Overall mean rating is 0.8 (SE = 0.8, N= 5) with all the values being less than 5 (Figure 28).
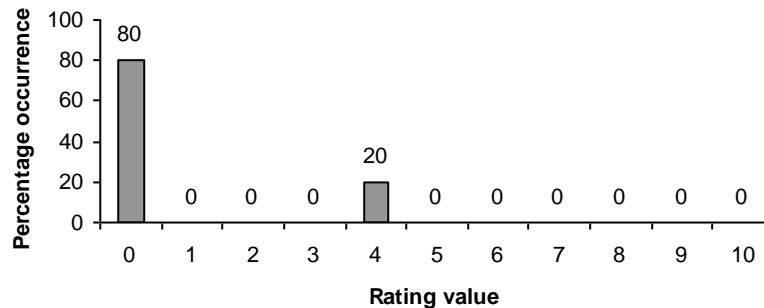
Figure 28: Rating values for infrastructure and records

There is no accommodation for elephant handlers. Mean rating is 0.0 (SE =0.0, N =10) and the mean rating for the condition of the howdah is 4.0 (SE = 0.0, N =10).
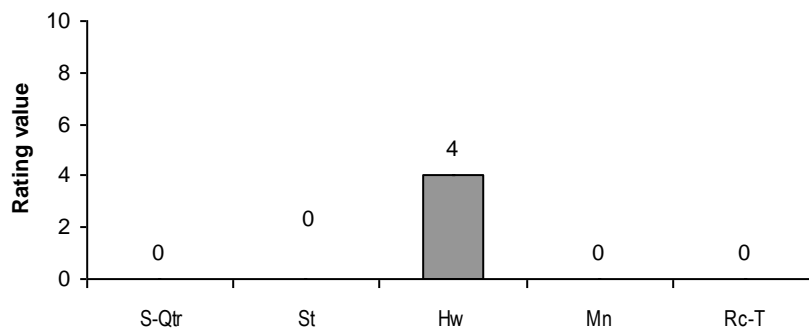
S-Qtr: Staff quarters   St: Status of quarters
Hw: Howdah condition   Mn: Maintenance of service/clinical/other records
Rc-T: Record keeping

Figure 29: Ratings for infrastructure sub-parameters.

A significant feature of the rating values is the lack of variability among elephants observed with only 7% of the parameters showing variation. This shows the uniform occurrence of the features for assessing the animals' welfare. The overall ratings for elephants, considered across each individual value and all parameters is 2.4 (SE = 0.1, N= 830, Figure 30). This value implies bad welfare condition for the elephants.
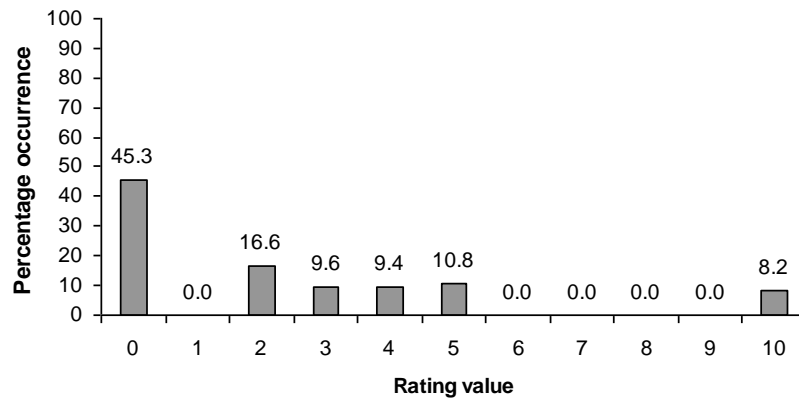
Figure 30: Ratings for elephants across all parameters.

Welfare status of the mahout

The welfare of the elephant handler (in this case the mahout) is important not only to the mahout, but also to the animal in his care, as his own poor condition results in poor handling and care of the elephant.

Each elephant has to support the owner, the mahout, two assistants and their families (Figure 31). Professional experience for handlers is more than two years and with a specific animal less than a year. Most learnt of handling elephants on the job and is a family occupation for all. Salary range is Rs1, 500–2,000 (US$= Rs.

Figure 31: Children of the owner and mahouts.

43.75) per month and none is permanently employed with the owner. No accommodation is available for them. Some slept with the elephants under the flyover (Figure 32). All the mahouts use stick and 'ankush' to control the animal. There are no periodic health check-ups or insurance cover for the handlers.

Figure 32: Mahout lives with elephant under the flyover.

All the mahouts consume alcohol. Overall mean rating for the mahout is 2.9 (SE = 1.1, N = 13) with 62% rating being less than 3 (Figure 31a), implying poor welfare condition.
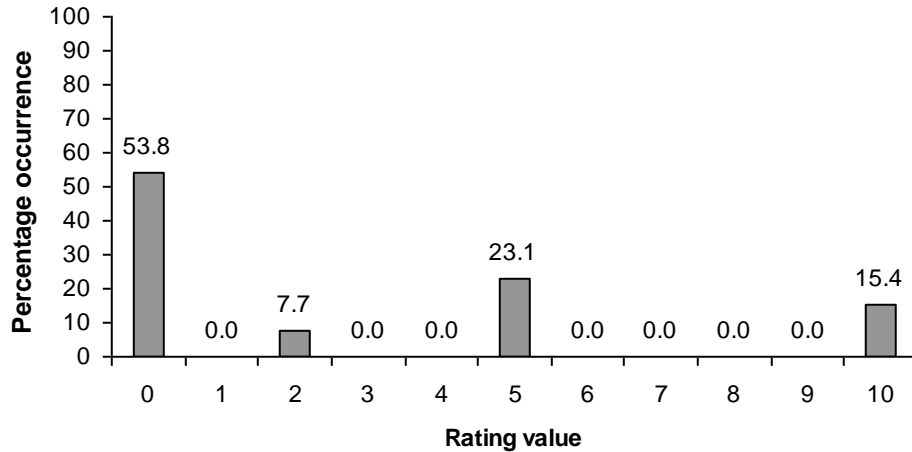
Figure 31: Overall ratings for mahouts.

The greater the experience of the mahout better the handling of the animal. More experience with a specific elephant would mean greater understanding between the particular animal and its handler. Frequent changes imply repeated learning taking place between handler and animal. Mean rating is 5.0 (SE =0.0, N =10).

Handlers whose family tradition is handling of elephants might perform better and are more experienced in the profession. Mean rating is 10.0 (SE = 0.0, N =10). Mean rating is 2.0 (SE =0.0, N =10) indicating poor remuneration. Health maintenance through regular check-ups is necessary in view of the zoonotic diseases that can be transmitted. The welfare status is rated across 13 parameters (Figure 32a) and the mean rating is 0.0 (SE = 0.0, N =10) implying absence of any healthcare.
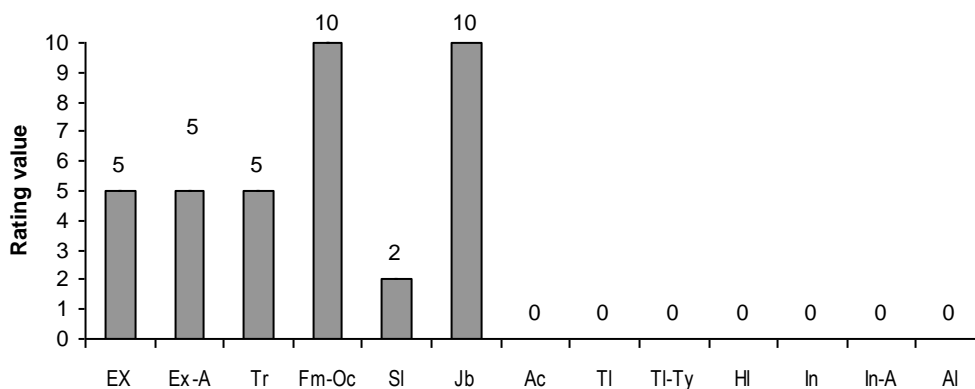
Ex: Experience as mahout   Ex-A: Experience with specific animal
Tr: Trained/not   Fm-Oc: Family occupation
Sl: Salary/year   Jb: Job status (permanent/temporary)
Ac: Availability of accommodation   Tl: Use of tool to control animal
Tl-Ty: Tool type used   Hl: Health check up
In: Insurance cover availability   In-A: amount of insurance
                        Al: Consumption of alcohol

Figure 32a: Ratings for sub-parameters of mahout welfare.

Comparison of ratings between elephant and mahout

The mean ratings for both elephant and mahout fall under 3, and there is hardly any difference (Figure 33) in the welfare values of elephant and mahout. This is also a clear indication that both elephant and mahout have poor standard of life in the city.
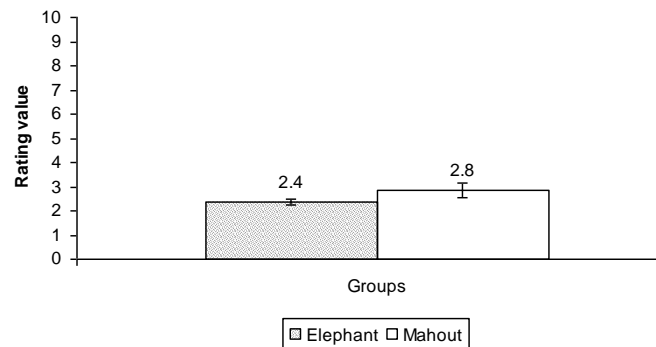
Figure 25: Comparison of mean ratings between elephant and mahout.

Discussion

Deviations from the physical, social and behavioural conditions found in the wild have been used to rate the welfare status of the captive elephant. The more unnatural the condition in captivity, the greater is the reduction in the welfare of the animal. There is a striking similarity in the way the animals are cared for and used in Punjab, more specifically in Ludhiana, by different 'owners'. The overall rating considered across each individual value and parameters is 2.4 indicating poor welfare conditions. Some of the parameters used for assessing welfare status were of the Yes-No type with a rating values of zero or ten. Such parameters formed 24% of the entire dataset. Zero values from such parameters formed 19% of all the individual rating values which show complete absence of the particular feature for that animal.

 Conditions detrimental to the animals are:

- Overall rating for shelter is 1.3 highlighting its unsuitability to the animals. The housing of all the elephants depended on makeshift arrangements under available urban structures amidst densely populated lower income group zones.

- This endangers the lives of the animals and also those of the people living nearby. All the animals are chained for a minimum duration of 12 h in the shelters. Unhygienic conditions due to accumulation of dung and urine at the tethering sites in the shelter spread disease among the animals. Wild elephants are known to forage and be active for 18–20 h a day (Eisenberg, 1981)[†].

- Hard substrates such as concrete/tarred roads and stone affect the feet of the animals leading to health problems (Rajankutty, 2004)[†]. Significantly, all the observed elephants had cracked nails.

- Access to water source with enough space and quantity of water to immerse them along with opportunities for wallowing and dusting is of considerable importance for elephants (Kane *et*

al., 2005). None of this is provided as the only source of drinking water is taps. Bathing is not frequent.

- Temperature regulation of the elephants: an aspect of significant association with the animals' health is the need for a suitable environment to regulate body temperature within tolerable limits. The mean monthly temperature is around 35–40°C in the location where the animals are housed with summer temperatures exceeding 45°C. All the elephants are made to work early in the day for a minimum of 12 h without shade or water or food. This effectively means that the animals are worked irrespective of the surrounding temperatures. Physical exertion of walking or being made to stand exposed to the sun increases body temperature. Kurt and Garai (2007) report that wild elephants rest in the shade during the hottest parts of the day.

- Sweat glands are located near the feet in elephants (Lamps *et al*., 2001) [†]. Their need to regulate body temperature depends largely on the surrounding environment as well as unrestricted movement to choose such an environment. Both these features are absent in the observed elephants. Even at night, when the animals are rested, they live only under concrete structures in urban and densely populated areas. This implies that the heat generated in the body by physical exertion during the day is not allowed to dissipate easily due to the surrounding micro-environment of concrete walls and absence of vegetation. Added to this, chaining of the elephants further hindered their ability to move around within the restricted environment too.

- An example of a reported activity of the elephants is: The elephant Laxmi, aged 35 years, was walked from Daudpur, 60 km from Ludhiana, with the mahout and his assistant seated on top, between 4 a.m and 4 p.m. During the period the elephant was not fed, given water or allowed to rest.

- Constant exposure to long hours of sunlight may result in diseases of the eye (Kurt and Garai, 2007).

- All the elephants have abscesses. Elephant skin is prone to pus formation (Kurt and Garai, 2007). Neglect of skin care or injuries caused by mechanical means such as abrasive action of chains or due to injuries caused by ankush leads to abscess formation (Kurt and Garai, 2007).

- Absence of oestrus cycle in all the adult females observed is a strong indication of unhealthy and unfavorable conditions. The absence of oestrus cycles leads to stress (Clubb and Mason, 2002).

- No records of health/service/ownership are maintained. None of the animals had access to proper and exclusive veterinary care by doctors with experience in treating elephants.

Welfare of the mahouts is given an overall rating of 2.9 implying poor conditions. Parameters which were given rating values less than 3 were:

- Low income. A salary of Rs.1500–2000 per month cannot support a family of four in urban areas. Four–five people and their families (an average of 10–12 people) are dependent for livelihood on one or two animals.

- There is no proper accommodation for the handlers.

- Use of tools to control his animal is universal among the handlers interviewed. This might imply lack of understanding between the animal and its handler and may lead to tool-use related injuries to the animal. None of the mahouts had any insurance cover in the event of any mishap involving the animal. Also periodic health check-ups are not conducted. The incidence of tuberculosis among elephant handlers makes it imperative for periodic check-ups (Cheeran, 1997).

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[†]: Original not seen

Appendix: Welfare parameters and their rating scale used for Captive elephants and handlers (Values for wandering elephants and their handlers in Punjab are highlighted in bold).

Enclosure/shelter

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

Enclosure/Shelter size

A	Free ranging	10
B	5000 sq m (=1.25*4047)	8
C	3750	6
D	2500	4
E	1250	2
F	**> less**	**0**

Flooring

A	Earthen	10
B	**Concrete/any hard surface**	**0**

Closed enclosure - type

A	Natural	10
B	**Man-made enclosure made of non-natural materials like RCC, asbestos, etc.**	**0**

Duration animal is kept in enclosure (day/night)

A	**24 h**	**0**
B	12 h	5
C	< 1 h	10

Overall Hygiene (Cleaning)

A	Daily	10
B	Once in two days	5
C	**Once in three days**	**2.5**
D	Once in 4 days/a week	1
E	No cleaning	0

Cleaning material

A	Material capable of effective dirt removal	10
B	**Only broom**	**2**

Water availability

A	Availability of perennial source of running water	10
B	**No water**	**0**

Source of running water

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

Distance to source of water (meters)

A	0–100	10
B	100–200	9
C	200–300	8
D	300–400	7
E	400–500	6
F	500–600	5
G	600–700	4
H	**700–800**	**3**
I	800–900	2
J	900–1000	1
K	Above 1000	0

Bathing (no. of times/day)

A	At least twice	10
B	Once	9
C	Once in two days	5
D	**Once a week**	**1**
E	**No bath**	**0**

Bathing place

A	Rivers	10
B	Large lakes / reservoirs/ water holes	5
C	Smaller water bodies like tanks, ponds	4
D	Tap water (Running)	3
E	**Buckets, pots, etc.**	**1**
F	**No water**	**0**

Bath duration

A	Within 3–4 h	10
B	2 h	6
C	1 h	5
D	**30 min**	**2.5**
E	<30 min	0

Bathing materials

A	Natural materials like Mundakai/ Pandanus	10
B	Hard material	4
C	Hard material (plastic brush, stone)	2
D	**No material**	**0**

Quantity of drinking water

A	Semi natural, exposed to source of running water	10
B	Semi-natural, exposed to artificial source of water buckets/any in other container)	5
C	**Kept in unnatural conditions, given about 100 litters/day**	**4**
D	Kept in unnatural conditions, given < 100 litres/day	2

Water test done or not

A	Yes	10
B	**No**	**0**

Rest availability

A	Yes (animal decided when to rest)	10
B	**Yes (mahout decides when to rest)**	**2**
C	No	0

Rest duration/day

A	Free ranging, as and when needed by the animal	10
B	**20% of 12 hr day of continuous human controlled activity**	**2**
C	No	0

Place of sleep

A	Sleep (natural conditions)	10
B	Sleep within any man-made enclosure	
C	With thatch	5
D	With concrete	4
E	With tin/ plastic sheets/ asbestos	3
F	**Tied with a 2 - 5 m chain (where the animal is restricted in its movement)**	**2**
G	</ =1m chain	0
H	No natural conditions + no man-made structures	0

Sleep availability Place of Sleep

A	**Yes**	**10**
B	No	0

Place of sleep

A	Sleep (natural conditions)	10
B	Sleep within any man-made enclosure	
C	With thatch	5
D	With concrete	4
E	**No natural conditions + chained**	**3**
F	Tied with a 2 - 5 m chain	2
H	</ =1m chain	0
I	No natural conditions + no man-made structures	0

Sleep area (size)

A	Natural conditions	10
B	Free within enclosure	5
C	2–5 m chain	3
D	**</ =1m chain**	**0**

Duration of sleep (night)

A	**4 h**	**10**
B	<4	5
C	<3	4
D	<2	3
E	<1	2
F	0	0

Walking

A	Natural/ free range	10
B	**Walk controlled by human handler**	**5**
C	No walk	0

Area of walk

A	Natural, forest conditions	10
B	Natural conditions, restricted space	5
C	**Urban environment, restricted space**	**3**
D	No walk	0

Time of walk

A	Early morning + late hours	10
B	Early morning + early evening	5
C	**Entire day**	**3**
C	Late morning + early evening	0

Nature of terrain

A	Always on hard surface	0
B	**Predominantly hard surfaces with < 20 % of natural substrate**	**2**
C	Natural substrates	10

Distance covered while walking

A	Natural conditions, unfettered walking	10
B	Urban conditions, unfettered walking	5
C	**Urban conditions, movement controlled by handler**	**4**
D	Urban conditions, no walk	0

Interaction –Yes/No

A	**Yes**	**10**
B	No	5

Group size

A	Anything that replicates natural group size	10
B	Single	0
B. i	Free- ranging conditions within a group, interaction allowed of ideal group size	10
B. ii	No free ranging but ideal interaction conditions	8
C	No free - ranging	
C. i	All females	8
C. ii	> Adult females with few sub adults better than all adult female	7
C. iii	**> one elephant + all elephants chained**	**3**

Age/sex class

A	Natural herd structure	10
B	50% of age-sex class of natural herd represented	5
C	**20–30 % represented**	**3**

Interaction distance

A	Within 2 meters	10
B	**Within 2 meters, chained**	**4**
C	> 2 m	0

Interaction (in hours)

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

Chaining

A	**Yes**	**10**
B	No	0

Behavior

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

Injured/killed

A	Yes	0
B	**No**	**10**

Stereotypic behaviour

A	Yes	0
B	**No**	**10**

Work

A	No + free ranging	10
B	Patrolling	8
C	Kunki for human–animal conflict mitigation	6
D	Safari	5
E	Timber	2.5
F	Standing - pooja	1.25
G	**Procession 0.62**	**5**
H	**Blessing & begging**	**0**

Work duration

A	< 1h	5
B	2 – 5 h	3
C	**12 h/ >**	**0**

Time of work

A	Early morning + late hours	10
B	Early morning + early evening	5
C	**Entire day**	**2**
D	Late morning + early evening	0

Maximum distance covered with weight

A	1 km	5
B	2 –10 km	3
C	**11–20 km**	**2**
D	> 20 km	0

Howdah type

A	**Soft, non-abrasive material**	**5**
B	Hard material	0

Howdah weight

A	**< 1 % of body weight**	**5**
B	> 1 % of body weight	0

Shade availability during work

A	Yes	10
B	**No**	**0**

Water availability during work

A	Yes, unlimited	10
B	Yes, limited + sufficient	5
C	**Yes, limited + insufficient/rare**	**2**
D	No	0

Water quantity and quality during work

A	Sufficient quantity+ tested for quality	10
B	**Insufficient quantity + not tested**	**0**

Food given during work

A	Sufficient quantity + variety	10
B	**Insufficient + little in quantity**	**2**
C	Absent	0

Food provisioning type

A	Free ranging + stall fed	10
B	**Only stall feed = 0**	**0**

Type of food (No. Of items)

A	Forest food with supplement	10
B	Forest food only	8
C	**No forest food, only varieties ***	

* Value for No forest food, is arrived based on number of food item given divided by 2.

Use of ration chart

A	**Yes**	**10**
B	No	0

Reproduction
Female

Cycling

A	Yes	10
B	**No**	**0**

Exposed to male

A	Yes	10
B	**No**	**0**

How often exposed to males

A	Regularly	10
B	Rarely	5
C	**Never**	**0**

Bred (Yes/No)

A	Yes	10
B	**No**	**0**

Nature of mating

A	Wild	10
B	Captive	8
C	**No**	**0**

Number of calves born

	Age class (Years)	No. of calves born	Score
A	51–60	7	10
B	51–60	5	8
C	51–60	3	4
D	51–60	1	2
E	51–60	0	0
A	41–50	5	10
B	41–50	3	5
C	41–50	1	2.5
D	41–50	0	0
A	31–40	3	10
B	31–40	2	5
C	**31–40**	**0**	**0**
A	21–30	2	10
B	21–30	1	8
C	21–30	0	0

Occurrence of disease/injuries/medical problems

(Health status) Nature of disease/injury

A	Harmful, painful, leads to low health status, non-curable or chronic	0
B	Less harmful/ painful, but leads to health problems, non-curable	2
C	**Leads to no further health problems, non-curable**	**4**
D	Leads to no further health problems, but not easily cured	6
E	Easily cured	8

Frequency of occurrence

A	**Regular**	**0**
B	Occasional	4
C	Rare	8

Deworming

A	Yes	10
B	**No**	**0**

Vaccination

A	Yes	10
B	**No**	**0**

Oiling

A	Yes	10
B	No	0

Oiling done

A	Regularly	10
B	**Occasionally**	**5**
C	Rarely	2.5

Blood, urine, dung sample

A	Yes	10
B	**No**	**0**

Body weight measurement

A	Yes	10
B	**No**	**0**

Veterinary care

A	Yes	10
B	**No**	**0**

Veterinary doctor availability

A	**Yes**	**10**
B	**No**	**0**

Experience in treating elephants

A	**Yes**	**10**
B	**No**	**0**

Years of experience

A	>10	10
B	5–10	5
C	**2–5**	**4**
D	**0**	**0**

Doctor's Visits

A	Daily	10
B	Weekly twice	8
C	On Call	6
D	Monthly	4
E	**Occasionally**	**2**
F	**No**	**0**

Doctor's experience

A	Above 30 years	10
B	20-30	8
C	10-20	6
D	**1-10**	**4**
E	< 1 year	2
F	**No experience**	**0**

Experience with specific animals

A	Elephants	10
B	Horses	8
C	**Cattle/sheep/dogs**	**4**
D	Poultry	2

Veterinary assistant's availability

A	Yes	10
B	**No**	**0**

Educational qualification of veterinary assistant

A	Yes	10
B	**No**	**0**

Maintenance of service, clinical and other records

A	Yes	10
B	**No**	**0**

Type of record keeping

A	Good	10
B	Average	6
C	**Bad**	**0**

Availability of staff quarters

A	Yes	10
B	**No**	**0**

Status of staff quarters

A	Good	10
B	**Bad**	**0**

Status of howdah

A	Good	10
B	Average	4
C	**Bad**	**0**

Mahout

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

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

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

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

Family occupation

A	**Mahout**	**10**
B	Others	0

Training

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

Salary (rupees)

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

Job status

A	**Permanent**	**10**
B	Temporary	0

Accommodation availability

A	Available	10
B	**Not available**	**0**

Use of tools to give commands

A	**No**	**10**
B	Yes	0

Tool type

A	No	10
B	**Metal ankush/stick**	**0**

Periodic health check-up

A	Yes	10
B	**No**	**0**

Insurance

A	Yes	10
B	**No**	**0**

Payment of insurance amount

A	Major part recommended	10
B	Half of the recommendation	5
C	Quarter of the recommendation	2.5
D	**< Quarter of the recommendation**	**0**

Consumption of alcohol by mahout

A	**No**	**10**
B	Yes	0

Project team

Field investigators
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Research team
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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 between pet, stray or wild animals, since both often require assistance and relief from cruelty, neglect and harm. The organization's objective has been to design services and facilities which are employed fully in the realization of these goals.

Asian Nature Conservation Foundation (ANCF) is a non-profit public charitable trust set 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 co-ordination with Government agencies, research institutions, conservation NGOs and individuals from India and abroad, in all matters relating to conservation of natural resources and biodiversity, endangered flora and fauna, wildlife habitats and environment including forests and wetlands. It participates and disseminates the procured information, knowledge and inferences in professional, academic and public forums.

Care of Animals & Protection of Environment (CAPE)-India is an NGO working for the welfare of animals, conservation of wildlife and its habitat and creating a congenial environment for all living creatures. It coordinates with other organizations with similar aims and objectives and creates awareness amongst general public as well as NGOs. CAPE-India is involved in enforcement, rehabilitation, awareness and projects like veterinary aid camps, tree plantation, etc.

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

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Captive elephants have not been part of the popular public culture of western India unlike in southern or eastern India. The elephants and their mahouts have drifted into the Punjab area from Bihar and Uttar Pradesh and have rarely been studied for their management or upkeep. They are an unknown group of animals in an unlikely place in an unsuitable environment and are taken from place to place to earn a living. This report assesses their welfare as to their physical, social and health conditions along with issues related to their management.