

Appraisal Reports
on the Housing Facilities provided to the
Asian elephant (*Elephas maximus indicus*) in the Zoos



Photo: Dr. Brij Kishor Gupta



जहाँ है हरियाली ।
वहाँ है खुशहाली ॥



Central Zoo Authority
(Ministry of Environment & Forests)

March, 2013

Appraisal Committee Members:

Suparna Ganguly
Kartick Satyanarayan
Dr. K. K. Sarma
Dr. Brij Kishor Gupta

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HIGH LEVEL EXECUTIVE SUMMARY

In response to numerous complaints received by the Central Zoo Authority regarding the plight of elephants in zoos, the CZA issued a directive banning elephants from zoo collections in 2009. It directed the zoos to shift all elephants from zoos to rescue centers and forest camps with an intention to improve the welfare and quality of life for these animals. Some zoos shifted their elephants to forest camps, while many zoos appealed to CZA requesting exemption from the above ban. The grounds were, primarily, old age of the elephants and inability of the elephants that have lived in zoos for several decades, to adjust to forest and camp conditions.

In response to mass appeal by Indian zoos, the CZA constituted an Elephant Appraisal Committee in September 2010. The committee's mandate was to examine the housing; keeping and welfare of captive elephants in the zoos and the conditions necessary for exemption from the ban. It was also necessary to examine whether the zoos requesting such exemption were willing and capable of improving space and welfare conditions for the elephants. The committee visited 19 zoos in 14 states housing a total of 74 elephants. The committee findings revealed that over 90% of the zoos were in violation of the Elephant Upkeep Guidelines issued by CZA. The shortcomings were unnecessary and include severe confinement, long hours of chaining, severe lack of space, faulty enclosure design, keeping elephants on concrete flooring, lack of free and easy access to drinking water and ponds, lack of adequate exercise, absence of grazing and foraging area, absence of enrichment in enclosures, absence of musth enclosures resulting in chaining of bulls in "musth" for several months, lack of supervision and monitoring of mahouts, absence of training for mahouts in elephant management, training, upkeep, husbandry, and welfare.

The Sub committee's evaluation of 19 zoos found that most zoos could easily provide their elephants much larger foraging and exercise areas with natural substrate and significantly improved living and welfare conditions for the elephants. There is a need for support and "will" from Chief Wildlife Wardens, Zoo Directors and in some cases, State Government support and cooperation from the State Zoo Authority.

There are some zoos where there is no scope for expansion of areas and there is no willingness to improve the conditions. In such cases the elephants must be shifted out to rescue centers preferably rather than forest camps with the Project Elephant or CZA meeting all capital and recurring costs of ensuring lifetime care of these elephants.

The ban has been upheld and exemptions are based on the compliance of each zoo to the immediate recommendations put forward by the committee. Zoos, unable to meet these challenges, will not be exempted. A timeline of 6 months from this date can be given to the zoos willing to make improvements and request exemption, failing which the animals will be shifted to rescue centers.

The Sub committee's tenure may be continued with an additional mandate to guide zoos on creating and modification of elephant management and housing facilities in compliance of above conditions, while also evaluating zoo elephant facilities every 3 to 4 times a year.

Brief Introduction

This collection of documents includes a high level executive summary, a detailed summary and individual reports of each of the 19 zoos evaluated by the CZA's Appraisal Committee for the Elephants housed in Zoos.

The individual reports represent the actual observations of elephant behavior, enclosure size and area, interactions with the concerned officials, mahouts, physical examination of the conditions of the elephants, elephant keeping and management.

The reports have attempted at objectivity and a scientific style of evaluation, based on welfare parameters published by the Project Elephant Directorate in 2008. The parameters, based on welfare conditions, veterinary support and manpower resources have been rated and evaluated on their merits.

It is pertinent to state that the individual zoo reports were not designed for formal publication and were aimed at detailed and easy reference on each elephant exhibit in the zoos that were evaluated.

DETAILED SUMMARY AND RECOMMENDATIONS

Proceedings of meeting of Sub-Committee to study recommendations made by the CZA Elephant Appraisal Committee on evaluation of housing facilities provided to elephants in various zoos held on 21st September, 2012

Following were present in the meeting:

1. Shri S.K. Patnaik
2. Shri B.S. Bonal
3. Ms. Suparna Baksi Ganguly
4. Dr. B.K. Gupta

Shri Kartick Satyanarayan could not attend the meeting because he was out of the country.

The present position of elephants in the zoos of the country was reviewed and it was found that at present there are 75 elephants in different zoos. Their zoo wise break up is in Annexure-A. Of them, 25 are males and 50 are females. They live in 21 zoos. Forty elephants have already shifted from the zoos to rescue centers/elephant camps or safari etc after the orders issued for same. The list is annexed as Annexure-B. The Elephant Appraisal Committee has already visited 15 facilities in the country and has already submitted their recommendation on ten of them. However, Ms. Ganguly threw light on the other five which they have visited but so far not submitted their reports which are under process. The reports were reviewed, which are quite detailed indicating the conditions of the enclosures, the health care, food, exercise and other parameters. The views expressed by different Chief Wildlife Wardens, Zoo operators and Zoo Directors against transfer of some animals or otherwise from the concerned zoos were taken into consideration. Which include; old age and physical incapability to adjust to forest or rescue center conditions, availability of all facilities for proper upkeep of elephants in their respective zoos and willingness to provide conducive environment, non- availability of suitable center within the state or in adjacent state or bad physical condition like frequent *musth* resulting in extreme difficulty to control etc. Some of them opined in favour of shifting some elephants to the camps and rescue centers and many of them have already moved out while few are to shift soon. After reviewing the reports, it was unanimously agreed to take following actions in respect of elephants in different zoos of the country. Number of elephant already transferred to forest camps at Wildlife Sanctuary/National Parks need not be included in the recommendations.

S. No	Name of Zoo	Number of Elephant		Current Area in acres / Sq Mts	Proposed area to be made available (Acres)	Recommendation & Justification for the Same
		Male	Female			
01	Arignagar Anna Zoological Park, Vandalur, Chennai,	05 45 y 2.3 y 2 y 1.2 y 1.0 y	03 28 y 7 y 7 mths	7 ha	602 ha	Large area is available. Zoo can serve as rescue center and with large areas allocated for the elephant and natural conditions, so that whenever felt appropriate they can be shifted to forest camps or forest rescue centers, preferably with their companions because they have developed attachment with each other.
02	Assam State Zoo, Guwahati	01 3.9 y	04 (23 y) (4.5 y) (8.6 y) (11.7 y)	2 ha presently given	175 ha including 95 ha reserve forest + botanical garden 30 ha + zoo area of 50 ha Area to be increased to 5 to 10 ha for elephants	The old enclosure on hillock is unsuitable for elephants as one elephant has also fallen off the hillock and sustained severe injuries leaving handicapped The above five zoos shall also serve as rescue centers and with large spaces and in natural conditions, so that whenever felt appropriate they can be shifted to forest camps or forest rescue centers, preferably with their companions because they have developed attachment with each other.
03	Bhagwan Birsa Biological Park, Ranchi, Jharkhand	02 14 y 9 y	01 15 y	2.5 acre	Zoo area 228 acres Eles can be given 10 to 15 acres	Large area is available and if welfare conditions are met then animals can be housed at the Zoo if zoo agrees to meet with conditions within stipulated timeline
04	Nandankanan Zoological park, Bhubaneshwar	02 3.7 2.8	05 58 y 48 y 15 y 4 y 2 mths	20,000 Sq mtrs or about 4 to 5 acres	Zoo area 296 ha So 10 to 20 acres can be given to elephants	Large area is available and if welfare conditions are met then animals can be housed at the Zoo if zoo agrees to meet with conditions within stipulated timeline

05	Dr. Shivaram Karanth Pilikula Biological Park, Mangalore, Karnataka (Data based on KS visit and yet to be visited by the Appraisal Committee)	0	02	Elephant encl is about 5 acres + but both elephants are confined for almost all the time	Lot of forest area is available. If the elephants can be kept without confinement and encl enrichment can be introduced, even the present encl would be good.	One cow and her calf are chained and confined for very long hours. Two mahouts are available from shimoga. The area available is large and also functions as mixed exhibit with some free ranging sambhur deer. The animals must be kept off chains after securing the perimeter of the entire area.
06	Kamla Nehru Prani Sangrahalaya, Indore	01 (43)	01 (48 yrs)	0.25 acres	52 acres zoo must give 2 to 5 acres immediately to the elephants or shift the animals to another facility	However, the female (Champa) will have no companion in the park and it is recommended that she may be shifted preferably to a rescue centre to be created in Kamla Nehru Zoological Garden, Ahmadabad where there is a single female elephant (Rupa) for giving her company.
07	Sanjay Gandhi Biological Park, Patna	00	01 (39 yrs)	5700 sq mtrs	153 acres	Since Patna Zoo does not have adequate areas, the elephant may be shifted to Ranchi Zoo, if the conditions are not complied.
08	Bannerghatta Biological Park, Bangalore, Karnataka	02	09 12 mths to 72 yr	0.25 acre for display	733 ha includes zoo area of 200 ha the safari enclosure may be enclosed to ensure the animals can be chain free	All Elephants are allowed with chains and in some cases hobbled in both fore limbs in a large open forested area adjacent to zoo premises now called as Elephant Safari. Some elephants still continue to remain on display inside the zoo premises. If the zoo can provide appropriate welfare conditions and specific needs of the animals, then they may be retained. If not they may be shifted to

						forest camp.
9	Sri Chamarajendra Zoological Garden, Mysore, Karnataka	03 (15y) (6 y) (3 y)	05 (56 y) (31 y) (7 y) (7 y) (7 y)	2 acres	Zoo area is 79 acres An area of 5 to 20 acres should be provided	It was recommended to shift them to Bannerghatta but if Zoo is willing to provide larger forested area and required staff including veterinary care, then retain them in the Mysore zoo itself as Bannerghatta already has 13 elephants.
10	National Zoological Park, New Delhi	02 (32) (14) Afric	01 (32 Y)	0.5 acres	Around 200 acres An additional area of 2 to 5 acres must be provided, with proper physical barricades for being chain free.	Present area in NZP is inadequate, the zoo is willing to provide a much larger enclosure and to provide appropriate facility as recommended, they should immediately take suitable step, so that the elephants shall be retained there and taken care of.
11	Rajiv Gandhi Zoological Park and Wildlife Research Centre, Pune	00	02 (13.5 y) (13.8 y)	5 acres	165 acres Area should be increased by 5 to 10 acres	The Zoo presently has (0:2) two elephants. They can also take care of two other elephants i.e. (0:2) 2 elephants from Aurangabad Municipal Zoo, whose condition is not appropriate there and cannot improve.
12	Thiruvanthapuram Zoo, Kerala	01 (32)	01 (79 y)	300 Sq Meters	32 acres	The female, which is too old and incapable of adjusting to a new forest camp environment, should be retained in the zoo while the male, who is much younger to her, should be shifted immediately to the Kappukad Elephant Centre in the state at the earliest.
13	Veermata Jijabai Bhosale Udyan-Zoo, Byculla, Mumbai	00	02 (46 y) (54 y)	4340 Sq mtrs	53 acres If 3 to 5 acres can be provided to the elephants then else may be retained. Basic welfare be initiated.	Area available is inadequate for two elephants who should be shifted to a suitable forest camp or rescue centre in a neighboring state or a rescue center can be created in Borivili for housing them.

14	M.C. Zoological Park, Chhatbir	02 (62) (3)	04 (60 y) (28 y) (45 y) (29 y)	505 acres	Willing to give about 20 acres plus access to surrounding reserve forest and river	The zoo is willing to provide much bigger wooded space. Elephants may be retained if appropriate area and care can be given to these animals and specific welfare conditions can be met with.
15	Nehru Zoological Park, Hyderabad	01 (31)	04 (40 y) (74 y) (42 y) (39 y)	10 acres	380 acres	Area provided is large and fairly adequate. The zoo must improve other facilities further and retain these animals, if not already shifted to Srishailam Tiger Reserve.
16	Zoological Gardens Alipore	03	3 (23 Y) (15 Y) (16 Y)	2200 Sq mtrs	20 ha No scope for expansion	Should shift elephants to Gorumara, where facilities appear to be more conducive for housing these elephants. However the state governments may take appropriate decision.
17	Kapilash Mini Zoo, Denkanal, Odisha	2 (2.5) (4.2)	1 (0.8 Y)	Currenty animals housed in less than 2 acres	228 acres available for expansion	Area appropriate for the existing calf and juvenile elephants. Rescue Center can increase area for elephants
18	Indira Gandhi Zoological Park, Vishakapatnam Andhra Pradesh	1 29 y	0	5 acres	Available for expansion 625 acres	Bull in musth 6 months of the year. Area is available for expansion and more elephants may be housed to give company
19	Sri Venkateswara Zoological Park, Tirupati, Andhra Pradesh Data based on BKG visit. Zoo and yet to be visited by Committee	02 35 36	02 60 y 11 y	No enclosure Only sheds measuring about 100 Sq mtrs each approx. Walk of about one to two km per elephant	Zoo willing to create a 50 acre enclosure for elephants if the zoo is permitted to retain the elephants	
20	Aurangabad Municipal Zoo, Aurangabad, Maharashtra	0	2 (48 Yrs) (13 Yrs)	1400 Sq mtrs	35 acres animals to be shifted as no scope for expansion	Mother and daughter pair housed at zoo. Mother has lost lower molar and therefore requires special feed diet. Area is very small

21	Kamala Nehru Zoological Gardens, Ahmedabad	0	1 (24 Yrs)	1 acre	May be allowed to retain elephants if zoo can provide 2 to 5 acres and zoo complies strictly with all CZA guidelines and elephant welfare	Needs more elephants for enrichment.
The Elephant Appraisal Committee has completed visit to 19 facilities and examined 74 elephants there. They should visit remaining facilities keeping elephants and send their recommendations for appraisal of the Central Zoo Authority						

After going through, the recommendations of the Appraisal Committee and discussion in the meeting, it was recommended that the facilities which will continue to maintain elephants with them must fulfill the following conditions:

1. The area should be at least 1 acre per elephant and provided with sufficient exercise in the morning and evening. More acreage is recommended for keeping animals engaged to avoid monotony.
2. The elephants should not be tethered down for more than 3-4 hours a day.
3. Morning and evening walks for elephants are mandatory before the zoo opens and after closing hours.
4. There should be sufficient vegetation and public should not be able to access the elephants.

The following measures are suggested for specific groups:

Calves and sub-adults:

1. The space and facilities for these elephants should be substantially increased, as has been confirmed will be done by the senior officers and directors of the above mentioned zoos.
2. The space secured by high quality fencing, barriers and containment for the safety of both elephant and man. This category of elephants should ideally not have moat structures or be placed on hill sides, since it is very dangerous for young animals who can fall and sustain severe fractures and even loss of life.
3. Safe fencing will facilitate natural foraging and grazing as a mandatory requirement, since all the elephants will need the experience to graze in the forest in the FCs and NPs, at a later stage.
4. Exposure to public denied.
5. Tethering and tying be kept restricted to only 3-4 hours in a day and that too, if deemed necessary. If tied, the elephants should be within touching distance of each other and not restricted in isolated spaces.

6. Training methods be explored for alternatives to traditional fear and dominance based training, which makes the elephant calves go through fear psychosis.
7. Enrichment like company of other elephants, wallowing, bathing, dust bathing facilities kept in the enclosures.
8. Sand piles kept in various locations so that the young elephants can lie down comfortably.
9. Drinking water accessed at will.
10. Elephant likes and preferences for their companions should be kept in mind when the time for shifting to forest camps comes. Special effort should be made not to separate them from their friends and companions of many years.

Adult elephants:

1. The elephants should be given as much possibility of exercising their choice, for any activity.
2. The elephants should not be tethered for more than 3-4 hours a day and that too, only for practice so that treatment procedures, foot care or blood collections can be done.
3. They should be walked for 2 hours twice daily – pre zoo opening and post zoo closure, during non-visitor hours, in specifically the non concreted pathways. This should be strictly implemented.
4. Pune and Patna are with adequately secured facilities. Ahmedabad should create similar facility. Hence, the elephants should be left untied during night hours.
5. They should be allowed unrestricted mingling.
6. Access to drinking water at will should be ensured.
7. Access to bath, mud baths, wallow and dust at will should be available.
8. Bath enclosure with a gently sloping pond to be constructed where they can submerge their bodies. Mahouts should give a good scrubbing during bath hours which is important for their skin conditions, control of mites and parasites, and fostering bonding between mahout and elephant.
9. Food should be distributed all around the enclosure to encourage them to walk and explore.
10. Natural diets like leaves, grasses, branches, grains rather than cooked foods should be given.
11. Tying in the concreted elephant sheds should be discontinued with immediate effect.
12. Enrichments like grasses, fruits etc should be tied to the trees, so that the elephants are encouraged to explore and access the foods.

Small elephant groups in M. C. Zoological Park, Chhatbir and National Zoological Park, New Delhi:

M. C. Zoological Park, Chhatbir:

1. The zoo to urgently incorporate the forested land within their elephant facility and to allow feeding, grazing and foraging in these spaces during day time hours.
2. Tying for a maximum of 3-4 hours to be done.
3. Bathing in the river may be arranged.
4. Enclosure space to be used during night time only and the elephants to be left untied except during onset of *musth* for the male.
5. Forest Camp routine for their group of 6 elephants to be followed.

National Zoological Park, New Delhi:

1. The zoo should increase space availability of their current enclosure.
2. Their second bigger enclosure should be put to use to confine the males, without chains, during *musth* periods.
3. The 3 elephants should not be separated from each other. The bull has a positive effect on the young male elephant and his presence is a deterrent to aggressive and defiant behavior of the adolescent African elephant.
4. The female elephant is past reproductive stage and is protective of the young male whom she has mothered as a sub-adult calf of 3 years. There is no chance of any of their mating or reproducing, hence no need for them being kept in separate facilities.
5. Bulls, during onset of *musth*, have to be separated in the unused but fully functional second enclosure.

It is recommended that zoos exempt from the ban be monitored regularly to ensure that the guidelines and norms are being followed for the welfare, comfort and health of the animals.

Sd/-

(Dr. B.K. Gupta)

Sd/-

(Ms. Suparna Baksi Ganguly)

Sd/-

(B. S. Bonal)

Sd/-

(S. K. Patnaik)

Central Zoo Authority
(Ministry of Environment & Forests)

Existing Guidelines for the Management of Asian Elephants in Zoos:

General

No elephants should be used for joyride or for begging from visitors. Mahouts should be strictly warned against this practice.

Space and Housing

The paddock space for each elephant should not be less than 0.5 hectares.

Concrete portion on the floor, if existing, should be lined with thick rubber matting with proper cambering for drainage and to protect the joint and bony prominences from getting bruised on the concrete during bath time.

Feed and upkeep

Diet needs to be changed (gradually) from being concentrate oriented to being more fibre/roughage oriented. The energy (sugar) contents (if provided any) should be drastically reduced. The elephants should be encouraged to go for natural foraging.

In case no natural water body exist within the space provided to the elephants, an artificial water pond/pool needs to be provided for the opportunity of wallowing and scrubbing of the elephants by the handlers at the time of bathing. There should be facilities for draining and cleaning of the pool once a day.

Potable water trough should be placed inside the enclosure so that the same is freely available to the animals. Water testing should be carried out periodically to check the water contamination etc.

More than one mahout per elephant should be appointed to take care of foraging need and exercise schedule of the elephants. The mahout should be sent for orientation training and upgrading his skill and knowledge of elephant husbandry.

Veterinary care & Population Control

The veterinary officer should visit daily to oversee the health of the elephants and carry out all clinical examinations, behavioral studies, foot care, and routine dung, urine and blood analysis under the guidance of veterinarians experienced in elephant care. They should seek assistance of the VetCollege for serological test for the commonly occurring infectious diseases.

The elephants should be regularly vaccinated against commonly occurring infectious diseases like tetanus, HS, rabies, FMD etc.

Veterinary training of the zoo vets on elephant healthcare and management is recommended.

Female elephants should be administrated contraception in order to avoid surplus birth unless the future of such elephants in a good welfare system can be ensured.

Exercise

It is recommended that the elephants be given opportunity to exercise at least 2-3 hours in a day by walking on natural substrate and avoiding the tarred metallic roads.

The reversing of the tethering hours may be beneficial. Night tying is not recommended and if necessary, needs to be done around trees in the enclosure. Different tethering spaces should be identified with long chains to trees inside the enclosure.

Enrichment

Species specific behaviour, exercise, walking, bathing or grazing is to be encouraged. Dust bath and mud wallows should be available in the enclosures.

Interaction

MUSTH – tuskers in musth should be separated from normal elephants and chained in special MUSTH enclosures so that they can't harm keepers, visitors and other elephants.

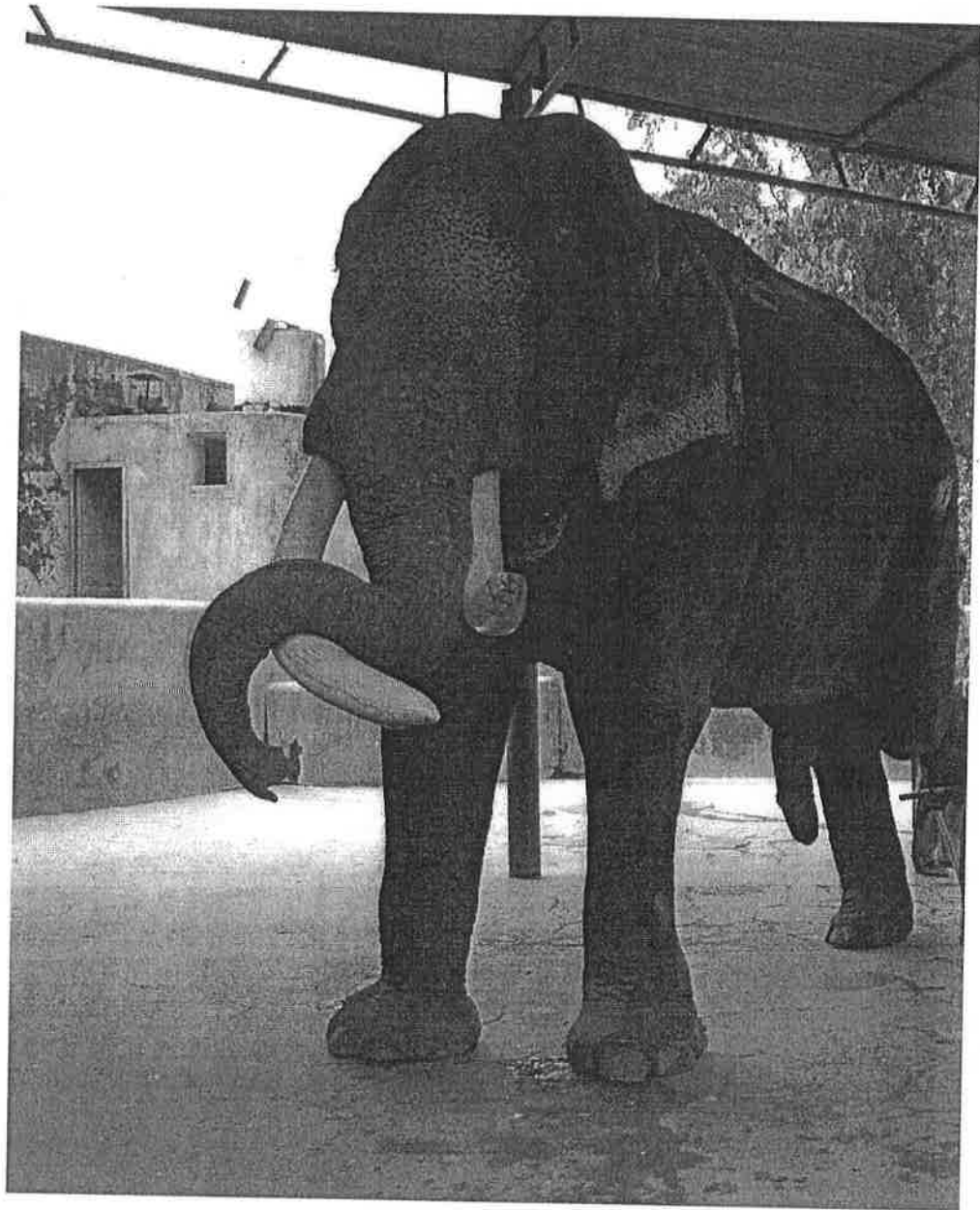
Care should be taken not to separate members of a closely knit herd to other locations.

The zoo elephants should be kept in a normal family herd or attached members instead of isolating them.

Chaining in the housing sheds should be done for short duration in order to have them conditioned for veterinary procedures, if need arises.

All zoos which fulfill the above norms should be allowed to retain the elephants they hold now.

M. C. Zoological Park, Chhatbir, Punjab



Suparna Baksi Ganguly and Dr. Brij Kishor Gupta

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PREFACE

The Member-Secretary, Central Zoo Authority (CZA), had issued a circular in November 2009 imposing a ban on keeping elephants in zoos in the country. The zoos have been directed to shift the elephants to camps and rehabilitation centres maintained by the State Forest Departments (SFDs) at National Parks, Wildlife Sanctuaries and Tiger Reserves for departmental use. Subsequent to the ban on keeping captive elephants at zoological parks, many zoos filed their request to the CZA to exempt their facility from the ban, citing old age, health and inability of their elephants to adjust to forest camp conditions. A small committee has been formed to verify the authenticity of these claims and suggest immediate measures.

The inspection of the zoo elephants has been an interesting and educational experience. It has also presented an opportunity to evaluate the welfare parameters that had been formulated as an instrument to objectively and scientifically assess living conditions of the elephants. The ban on keeping elephants in zoos has been implemented keeping in mind the welfare of the elephants. The decision of keeping them in zoos if living conditions can be improved based on unutilized resources of space, natural water bodies and forests availability and also keeping them in zoos if their conditions are bad, viz. ill-health, old age, and inability to survive in forest camps – defeats the very purpose of the ban, which may not be the intention of the committee.

However, committee's findings may give direction to the changeover to an elephant sanctuary or park center model, distinct in identity from the zoo model. The model of a zoo becoming an elephant sanctuary or park may depend on the better living conditions that are given to the elephants displayed in a zoo. Additionally, the appraisal by the committee may direct in assessing living conditions of those animals from zoos which do not have the natural resources to maintain such mega-fauna, and recommending their transfer to an authorized rescue/care center.

The current appraisals of the M.C.Zoological Park, Chatbir, Punjab Zoo may have higher ratings in the parameters for interaction, manpower, breeding, veterinary support but it has below average ratings for space, exercise, enclosure, water etc. The management has not put their attention and mind to improving the lives of the elephants, in spite of having vast resources of space, water and manpower.

However, given the vast resources of space, water and manpower and also with some specific modifications, M.C.Zoological Park, Chatbir may be qualified to enter into the phase of converting the zoo in to an elephant park. By adopting this approach, the zoo may get much recognition and appreciation to better the lives and conditions of

this iconic, keystone species and also make it a research center for scientists, visitors and students. There is knowledge and expertise available to support this transition, from national and international resource team of experts from captive elephant rescue centers, captive elephant welfare specialists and M.C. Zoological Park, Chatbir's own manpower resources of experienced mahouts and officials.

ACKNOWLEDGEMENTS

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EXECUTIVE SUMMARY

The appraisal of the elephant facility at M.C.Zoological Park, Chatbir, Chandigarh was conducted in August, 2010 by a committee specifically appointed by the CZA; the committee investigated the welfare status of the elephant kept in this facility. The Committee also made detailed enquiry into the status of the mahouts and handlers and their experience and knowledge of the elephants they were looking after.

The results are based on several welfare parameters, which included physical/ social/ physiological features along with the availability of veterinary care and facilities available to manage the elephants. A team of experts rated different parameters of importance to the welfare of captive elephants and this rating was then used to assess the welfare status of elephants and mahouts/cawadis. Here expert rating (E-R) and Mean Rating (M-R) obtained is based on the ground appraisal, to compare the welfare status of the elephants.

The data processing and the resultant appraisal report are based on the knowledge gained through the all India Captive Elephant Survey executed by the Compassion Unlimited Plus Action (CUPA) with the technical support from the Asian Nature Conservation Foundation, funded by the Project Elephant, MoEF.

The zoo has 6 (2 males and 4 females) elephants, the age class ranged from 3 to 62 years, and with a mean age of 38 (SE= 10). The female ages ranged from 28 to 60, mean age being 41 (SE=9.2).

Of the six individuals, three were wild caught, two were rescued and one elephant was captive born. M-R was 2.0 (SE= 1.1, N=6) showing a deviation of 67% from E-R.

The elephants' shelter has metallic roof, there are no shades or trees in the enclosure and the flooring is of concrete in the shelter area. M-R for shelter related parameters was 2.3 implying a deviation of 71% from E-R.

Although the zoo bordering the river (Figure 6a) and a forested area on the outer bank has been left with its original wooded cover, a stagnant pond with stated capacity of 10, 35,000 lt. for bathing and separate water tank for drinking was observed. The bath water is changed once in a week.

The group comprised of adult females, a juvenile male and a single adult male, with opportunity for interaction. M-R for interaction opportunity was 9.0 showing no deviation from E-R.

The elephants were exposed to individuals of opposite sex; the adult male had sired an offspring. M-R for reproductive status was 5.6 (SE= 2.4, N*= 3) implying a deviation of 20% from E-R.

Foraging in vegetated areas was limited to the grass growing within the enclosure (figures 10 and 11). Stall feed was provided. The stated food is rotis (wheat flour bread), black grams, banana and green fodder and weekly gur (sugarcane molasses). M-R for food provisioning type was 9.0 implying no deviation from E-R. M-R for number of food items provided was 2.5 indicating a deviation of 72% from E-R.

Foot problems were noticed in the form of cracked soles and overgrown nails M-R was 3.3 showing a deviation of 59% from E-R

Considering all the sub-parameters together, the overall rating for the elephants in the zoo was 4.0 indicating a deviation of 50% from E-R.

The Zoo management voiced that the elephants were an attraction for the many children and visitors. They also felt that being used to a particular diet, especially in the case of the older two elephants; they may not be able to adjust to the rigors of a forest camp and would need more intensive management, since they had been conditioned to the same for many years.

The needs of the elephant, in spite of the presence of veterinarians and experienced forest officers, seemed to be unknown to the management.

RECOMMENDATIONS

Change in management system

If the zoo management is desirous of keeping the elephants, it can be permitted only through adopting elephant sanctuary or care centre model. If they have to get into the model of an elephant sanctuary or an elephant park, they need to substantially alter the current captive elephant management style, keeping in mind the space and accessibility to a natural free flowing water source already available.

Enclosure and Space

The elephant enclosure should be increased to incorporate all the surrounding spaces, which have wooded cover and tree shade. The elephants should be taken twice a day to bathe in the nearby river. If displayed for the zoo audience, it should be in a "safari" model, with the elephants free to move, bathe, walk, indulge in dust bath or mud wallows, interact with each other in the shade of trees and within the forest cover around. After the evening bath in the river, the elephants should be left into the forest to graze.

Caution to avoid surplus birth

The lacuna in the current housing and environment will be naturally rectified with this change in management mode. It is also cautioned and recommended that the female elephants be administered contraception to avoid the birth of surplus animals, unless the future of such elephants in a good welfare system can be assured.

Management of rescue/care center in the existing framework

It is strongly recommended that M.C.Zoological Park, Chatbir enter into a MOU with a reputed NGO for managing, creating and overseeing the change over from zoo captivity to an elephant sanctuary or nature park model in public-private participation. This would bring in more resources of skill and technical knowledge and the transition can be made easily, with shared team responsibility.

The effort can be jointly supported by CZA, Project Elephant Directorate and external sources. The proposed Elephant Nature Park at Chatbir should become the care center model for all North Indian zoos that do not have the potential of the latter, for improving the scope and scale of welfare measures for their own and other zoo elephants.

The Committee strongly recommends that the zoo elephants be now housed and managed in an elephant or Nature Park, with its own distinct identity, separate

entrance and separate routine, woven around the needs of the animals and not the needs of the visitors and public.

Background

In 2009, the Central Zoo Authority (CZA) made it mandatory for zoos to discontinue keeping elephants, shifting the existing animals to forest camps/ care centers.

The circular cites the following reasons for banning elephants from zoos:

- a. The housekeeping in zoos is poor causing trauma to elephants
- b. Elephant is a free ranging mega-herbivore and very few zoos in the country have adequate space to permit free movement of elephants which are kept chained for long hours, causing stress to elephants
- c. Captive elephants in zoos hardly breed
- d. There is very little scope for *ex-situ* to *in-situ* linkage in the context of zoo elephants in India
- e. There are instances of zoo elephants coming into *musth* causing serious threat to visitors
- f. The zoos have tremendous financial liability for daily maintenance / housekeeping of elephants

The CZA's circular constitutes a major policy decision by the Government of India which has great implications for the management of zoos as well as elephants in the country.

Further, a committee was formed to decide on specific cases of zoos seeking exemption from this ban based on the elephants' captive conditions as well as related parameters such as age, health, duration in captivity in the present location, etc.

Elephants in captivity: how good is their welfare?

A nation-wide survey (Varma and Prasad, 2008) was conducted to study the welfare status of captive elephants maintained by various management regimes such as forest camps, temples, private owners, zoos and circuses. The study revealed that captivity and elephants are not compatible as the elephants' welfare is always compromised due to the captive conditions imposed.

Among the different regimes keeping elephants, those owned and run by the government are forest camps and zoos. The study also showed that the forest camps were regimes providing relatively better welfare conditions for the elephants among

all the regimes surveyed. Zoos, even owned by government, in many of zoos, their conditions in terms elephant welfare is not satisfactory.

Considering the poor welfare status of elephants with most non-government institutions, the decision to ban keeping of elephants in these facilities maybe be hindered by religious/ political/ economic issues. Some institutions may not be worth banning as their elephants may survive only for a short-duration due to the age structure of the elephants maintained, social isolation enforced in some institutions and absence of captive births (Varma et al., in press).

Given this background on the poor welfare status of captive elephants in non-government institutions and obstructions to enforcing a ban, the ban on keeping of elephants in zoos will give the right message to the public on the resolve to maintain better welfare conditions for captive elephants.

Exemptions— what criteria to use and action to be implemented

With the imposition of a ban on zoo elephants, it is to be expected that each zoo will try to request the CZA for exemption of its facility from the ban on various grounds. The decision to exempt should be made only after a visit to the particular location and identifying reasons for exemption, if any.

The underlying reason for the ban on elephants is the poor welfare of the elephants in captivity. Hence, the welfare status of elephants in any facility seeking exemption from the ban needs to be studied. Poor welfare conditions would imply discontinuation of the facility in its present form. A rating method was developed at a workshop conducted by Project Elephant (Varma and Prasad, 2008) to assess the welfare status of captive elephants. Good rating of a facility would imply better welfare conditions as opposed to a poor rating.

The ban of elephants in zoos has to be imposed, given our current perception of what a zoo stands for (restricted space, emphasis on display of elephants to visitors, use of elephants for tourist rides, scheduled hours of elephant maintenance by mahouts, chaining, indoor enclosures, etc). A facility that gets a good rating will not impose such unsuitable conditions on its elephants. Thus, such facilities can be termed “Elephant Parks/ sanctuaries/ care-centers” wherein natural living conditions will be provided for the elephants and emphasis on revenue generation through display can be stopped. Such parks/ sanctuaries can reduce the cost of investing in developing new care- centers for elephants. If a zoo gets a poor rating, the elephants from such facilities may have to be moved to specific care-centers.

The concept of transferring elephants to a more natural environment, as present in forest camps, may not be feasible for zoo elephants as such elephants may not survive in a near complete natural environment of free-ranging in forests and intermingling with wild elephants, due to their long periods of isolation from such environments, age related factors and the issue of disease transmission from the new set of individuals to the wild. Thus, zoo elephants will have to be shifted to a controlled near-natural environment in care centers.

The knowledge gained from this appraisal can be used as guidelines for decisions regarding continued maintenance of elephants in specific zoos.

Case study: The Mahendra Mohan Chaudhary (MC) Zoological Park (M.C.Zoological Park, Chatbir)

The Mahendra Mohan Chaudhary (MC) Zoological Park, Chatbir is spread over an area of 202 hectares or 505 acres of protected forest, once the hunting reserve of the Maharajah of Patiala. It is located on the River Gagghar, which runs on the boundary of the Park. The actual zoo occupies about 12ha (30 acres) of this zone. The rest, bordering the river and a forested area on the outer bank has been left with its original wooded cover.

The Zoo management voiced that the elephants kept in the zoo were an attraction for the many children and visitors. They also felt that being used to a particular diet, especially in the case of the older two elephants; they may not be able to adjust to the rigors of a forest camp and would need more intensive management, since they had been conditioned to the same for many years.

Method

The appraisal of the elephant facility at M.C.Zoological Park, Chatbir, Chandigarh was conducted on the 11th August, 2010 by Dr. Brij Kishore Gupta (CZA, Delhi) and Mrs. Suparna Baksi Ganguly (CUPA, Bangalore). Welfare status of the elephant kept in this facility has been assessed considering the physical environment, social and behavioural features along with availability and access to veterinary personnel and facilities. Data was collected through observation of animal/s and interview of personnel/management, representing various aspects of the elephant's life in captivity. The data was grouped into different categories (parameters) based on its identity in terms of physical/social/ managerial/ physiological relevance to the animal.

The rating method

The rating scale from zero (unsuitable conditions) to ten (suitable conditions) was used to assess the welfare status of captive elephants and their handlers. Experts (both wild and captive elephant specialists, wildlife veterinary experts, managers from

protected areas, those having both wild and captive elephants and other wildlife, members of welfare organisations and elephant handlers) were invited to assess the welfare based on welfare parameters and their significance through an exclusive workshop conducted on the subject (Varma, 2008; Varma, et al., 2008; Varma and Prasad, 2008). Experts rated a total of 114 welfare parameters covering major aspects of captivity

- The experts, based on their concept of the importance of a particular parameter to an elephant, developed rating for each parameter. For example mean expert rating of 8.0 (SE= 0.5, N=29) for a parameter 'floor' and 9.0 (SE=0.4, N=31) was arrived for 'source of water' from the ratings suggested by each expert.
- A mean rating for each parameter, across all the participating experts, has been used as the Experts' Rating (E-R) which represents the importance attached to a parameter.
- For example, if an elephant is exposed only to natural flooring, the animal receives a rating of 8 and for entirely unnatural flooring the value is 0; if an animal is exposed to both natural and unnatural flooring, the value is 4 (as $8+0/2= 8/2= 4$). If an elephant is exposed to a natural water source, such as a river, it receives a value of 9; if the source of water is large lakes or reservoirs, it gets 4.5. A value of 3.5 is assigned for small water bodies like tanks and ponds. Tap water (running) gets 2.5 and if only buckets, pots, and tankers are in use, then the allocated value is 0.5.
- Elephants were visited on the ground; data for each parameter was collected by direct observations or with the interviews of people associated the animal. Mean Rating (M-R) was calculated for a given parameter, along with its sub-parameter. Thus the Mean Rating (M-R) denotes welfare status of existing conditions on the ground for the particular parameter.
- In this appraisal, variables which represent a common feature of the captive condition have been grouped to form a parameter. For example, the variables shelter type, shelter size, floor type in the shelter; all represent different aspects of the physical space provided to the elephant. Hence, they are grouped together to form the parameter "Shelter" and each constituent variable is a sub-parameter. In this appraisal, the E-R for a parameter (say, shelter) represents the mean of E-Rs across all related sub-parameters. M-R is also based on similar lines.
- E-R and M-R for each of the regimes represent the average across related parameters observed for the regime. For instance, E-R / M-R for a parameter "shelter" represents the average of related parameters (termed sub-parameters) such as type, flooring, size, and shade availability.
- Results have been presented comparing E-R and M-R as a means of comparing the extent of deviation present in the parameters observed. The difference

between E-R and M-R (expressed as percentage) indicates deviations from the prescribed norm.

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

Results

Population Status

The zoo has 6 (2:4) elephants in its possession. The zoo has 6 (2 males and 4 females) elephants, the age class ranged from 3 to 62 years, and with a mean age of 38 (SE=10). The female ages ranged from 28 to 60, mean age being 41 (SE=9.2).

The oldest elephants are:

1. Rajkali, female, 60 years old, seized in 1999 from a wandering "mahant".
2. Rajmangal, male, 62 years old, seized in 1998 from a "sadhu".
Both have lived 11 and 12 years, respectively in the zoo.

The other four elephants are:

3. Parvati, female, 45 years, wild caught in Assam in 1977. Living in zoo- 33 years.
4. Hema, female, 29 years, wild caught in Assam in 1995. Living in zoo - 15 years.
5. Maya, female, 28 years, wild caught in Assam in 1995. Living in zoo -15 years.
6. Rajveer, male, 3 years old and born in the zoo in 2007.

Source

Of the six individuals, three were wild caught, two were rescued and one elephant was captive born. The change in living conditions experienced by wild caught individuals will be more than those experienced by captive born elephants. M-R was 2.0 (SE=1.1, N=6) showing a deviation of 67% from E-R.

Enclosure (shelter size):

The elephants' enclosure occupies about 1.25ha. This represents only 0.61% of the total area available to the zoo (Figure 1).



Figure 1: Elephant enclosure, note absence of trees within

Keeping in mind that elephants are long-ranging species and in prime elephant habitat (Sukumar, 1989) wild elephant densities are estimated to be two elephants/ km² (Varman et. al., 1995) and this may translate into 125 acres/animal.

When in captivity, an elephant should be housed in an enclosure that provides at least 1% of the space that it would need in the wild, within which natural forest conditions exist in the context of land availability and resource allocation in captive situations. Therefore, the proper housing size could be 1.25 acres (1 acre = 4047 m²).

However, for more than one elephant, space is not divided but shared. Hence, the minimum area needed for the group size should also be considered. If adult males are present, the shelter size should be much larger. Ideally, a shelter should function to guard against sun/rain whereas an enclosure should refer to the whole area.

Shelter type:

The elephants' shelter has metallic roof, which would tend to capture heat in the daytime and release heat in the night time (figures 2 and 3).

A variation of shade types (including both natural and artificial shade types) is considered ideal for a group of elephants to avoid monopoly of the shade area by one dominant animal. Shade type should be such that there should be free flow of air in and out of the shade area. Tin or asbestos does not allow hot air to move out and they radiate more heat even during cool hours. We strongly advise against the usage of asbestos because of its toxicity.

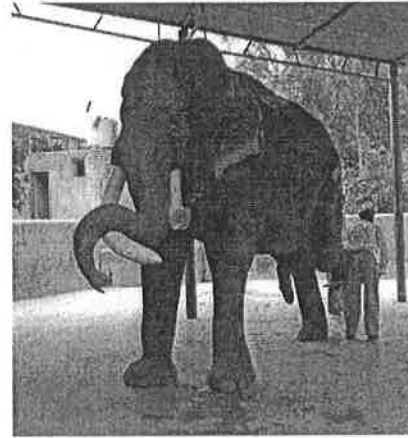
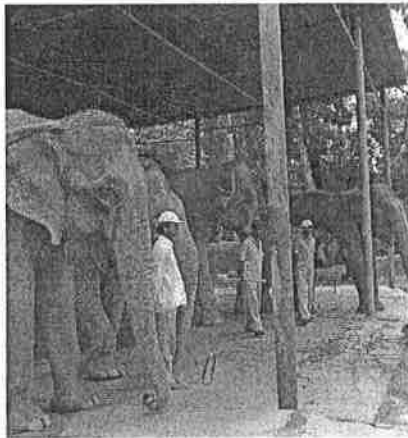


Figure 2: Metallic roof of shelter Figure 3: Concrete flooring

Shade availability

There are no shades or trees in the enclosure.

Captive elephants need to be provided with some sort of shade to reduce their exposure to the harsh sun (Kurt and Garai, 2007). It should also be noted that since elephants in the wild choose when to utilise shade, captive elephants should also have the right to decide as to when they need shade and should not be forced to unnecessarily stay under their tin roof shelter. It is recommended that elephants should be provided with shade in the enclosure and not just be confined to the shelter. They should have access to full and partial shade during the day, best provided by thatch structures or trees.

Flooring

The flooring is of concrete in the shelter area.

It is recommended that substrates such as earthen floor that surrogate an elephant's natural living conditions should be used. Hard substrates result in foot problems (Benz, 2005). If for some reason earthen floors cannot be provided, then cement floors are practical if the animal is only restrained on it for short periods of time. For bulls in musth, wood in kraals is considered ideal. Due to the extreme summer and winter conditions, the elephants are forced to be inside the shelter area, which is not appropriate for long term usage.

M-R was 2.3 (SE= 1.1, N*= 4) implying a deviation of 71% from E-R. Figures 4 and 5 provide ratings and percent deviation from E-R, respectively, for each of the sub-parameters.

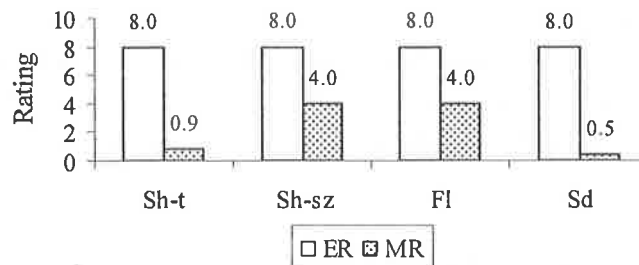
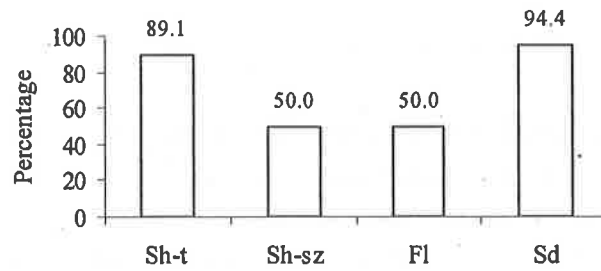


Figure 4: Comparison of E-R and M-R for shelter



Sh-t; Shelter type Sh-sz: Shelter size Fl: Flooring Sd: Shade availability
 Figure 5: Percent deviation from E-R for shelter

Water availability

Although the zoo bordering the river (Figure 6a) and a forested area on the outer bank has been left with its original wooded cover, a stagnant pond with stated capacity of 10, 35,000 l for bathing and separate water tank for drinking has been provided. The bath water is changed once in a week.



Figure 6a: A river bordering zoo

Natural river water is the best source of drinking water as it provides a perennial flow of water that is relatively free from contamination, is not limited to one specific spot and can thus allow the elephant to roam and move freely throughout the area. If available, ad lib supply of clean water can be given. Quality of water is very important.

Bathing place

The existing pond water is used for bathing 6 elephants for 7 days. The level of dung contamination is high.

In addition to cleanliness by removal of dead cells or parasites, and cooling the body, the bathing place should allow for enrichment of social bonds and physical exercise. The bathing place should be large and deep enough for the elephant to lie over and be completely submerged (Olson, 2004). It is also important for the bathing place to be

free from contamination. In case of standing water it should be ensured that the elephant is allowed to drink water before being taken for its bath and also ensure that dung is not present in the water. These factors cannot be implemented in the present scenario.

Rating for water provided for the elephants included all of the above sub-parameters. M-R was 2.3 (SE= 1.1, N*= 4) implying a deviation of 71% from E-R. Figures 6b and 7 provide ratings and percent deviation from E-R, respectively, for each of the sub-parameters.

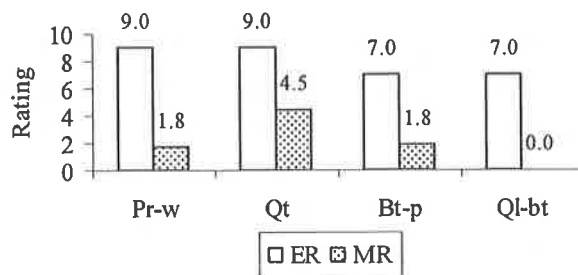
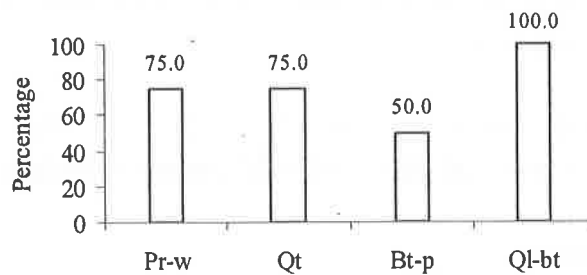


Figure 6: Comparison of E-R and M-R for water



Pr-w: Availability of perennial source of running water

Qt: Quantity of water available

Bt-p: Bathing place

Ql-bt: Quality of bathing water

Figure 7: Percent deviation from E-R for water

Walking

It was reported that the elephants walk once a day in a given area of the zoo. This is clearly insufficient. The foot conditions needed attention and trimming of overgrown nails and cuticles.

Absence of physical exercise (walking) on a variety of substrates may lead to foot injuries and diseases. Walking keeps the muscles and joints in healthy condition, prevents obesity and improves circulation. Hatt and Claus (2006) cite reports of obesity being linked to foot and joint problems. Benz (2005) cites the importance of

exercise which otherwise leads to overgrowth of the soles of the feet and causes other foot problems.

M-R for opportunity to walk was 9.0 (SE= 0.0) showing no deviation from E-R.

Duration in free-range environment

Though the elephants, when observed had no chains, except for the male kept separately, the animals enclosure is not sufficient to allow for adequate grazing or foraging.

A free-range environment signifies that the animal is not chained to one place and is allowed to roam/walk and move about freely. Roaming can be with or without chains. However, it is important to note that an elephant should be allowed to roam for a fixed number of hours as there must be time allotted to subject the elephant to regular health checks, and also provide sufficient time to manage and train it for veterinary care. M-R for walk duration was 1.0 (SE= 0.0) indicating a deviation of 88% from E-R.

Opportunity for social interaction

The group comprised of adult females, a juvenile male and a single adult male, with opportunity for interaction.

M-R for interaction opportunity was 9.0 (SE= 0.0) showing no deviation from E-R. M-R for group size was 7.0 (SE= 0.0) indicating a deviation of 13% from E-R.

Reproductive status

The elephants were exposed to individuals of opposite sex; the adult male had sired an offspring. Rating for reproductive status of the elephants included all of the above sub-parameters. M-R was 5.6 (SE= 2.4, N*= 3) implying a deviation of 20% from E-R. Figures 8 and 9 provide ratings and percent deviation from E-R, respectively, for each of the sub-parameters.

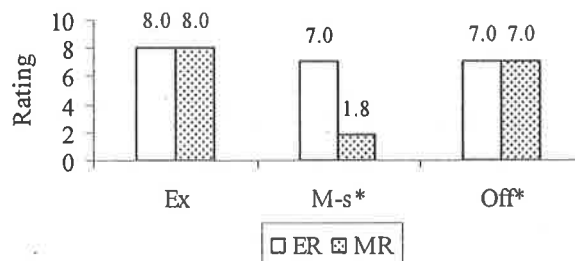
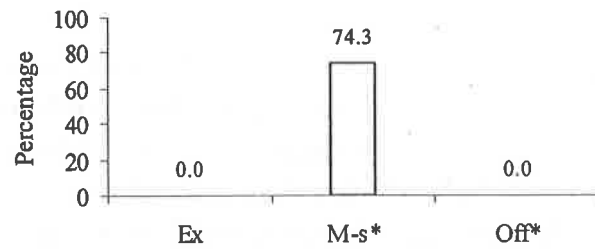


Figure 8: Comparison of E-R and M-R for reproductive status



Ex: Exposure to individuals of opposite sex sired

M-S: Male source Off: Offspring

*: Rating based on single individual

Figure 9: Percent deviation from E-R for reproductive status

Food

Foraging in vegetated areas was limited to the grass growing within the enclosure (figures 10 and 11). Stall feed was provided.



Figure 10: Adult female trying to reach side of enclosure

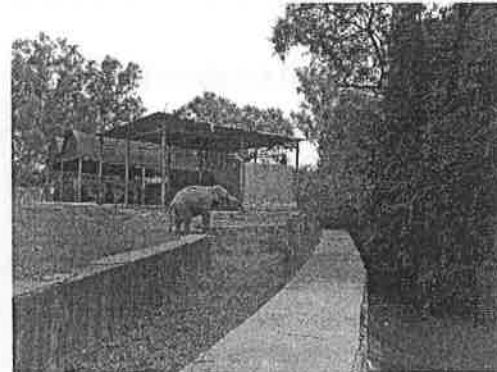


Figure 11: calf pulling at branch on other across moat for forage

Wild elephants are reported to feed on more than 75 species of plant foods (Shoshani and Eisenberg, 1982) and perform a number of manipulations with their trunk, legs/tusks prior to eating (Kurt and Garai, 2007). Food provided for elephants should take care of nutrition, opportunity for exercise (during food preparation such as bending, pulling, breaking, etc.) and expression of natural behaviour that are seen while foraging and feeding. M-R for food provisioning type was 9.0 (SE= 0.0) implying no deviation from E-R.

Type of food (Number of items)

The stated food is rotis (wheat flour bread), black grams, banana and green fodder and weekly gur (sugarcane molasses). This, though sufficient in quantity does not provide the diversity or variation which an elephant needs. It is limited in variety and scope. This is detrimental to an elephant's health and well being.

Stall feed may not be able to replicate the wide diversity of food that elephants come across while foraging in the wild. Only stall feeding compromises the required diet of the animal as opposed to a free ranging animal. Additional supplements apart from forest food (derived from free ranging) are recommended. In theory, a well-kept captive elephant should be healthier than a wild one, because a caring owner would always ensure the elephant has the right nutritional supplements throughout the year which might not be available naturally. However, this is not always possible.

M-R for number of food items provided was 2.5 (SE= 0.0) indicating a deviation of 72% from E-R.

Health status

Foot problems were noticed in the form of cracked soles and overgrown nails (figure 12).

Olson et al., (1998) mention inadequate exercise among captive elephants as a reason for infections of the pad and overgrown nails.

M-R was 3.3 (SE= 0.0) showing a deviation of 59% from E-R.



Figure 12: Note cracks on pad and base of toe

Overall Rating

Considering all the sub-parameters together, the overall rating for the elephants in the zoo was 4.0 (SE= 0.9, N*= 19) indicating a deviation of 50% from E-R. This implies, on average, any of the observed parameters would deviate to the extent of 50% from the norms prescribed by experts. Figure 7 gives the distribution of percent deviation from E-R for all the observed sub-parameters/ parameters. 68% of the observed features showed a deviation of 50% or more from E-R.

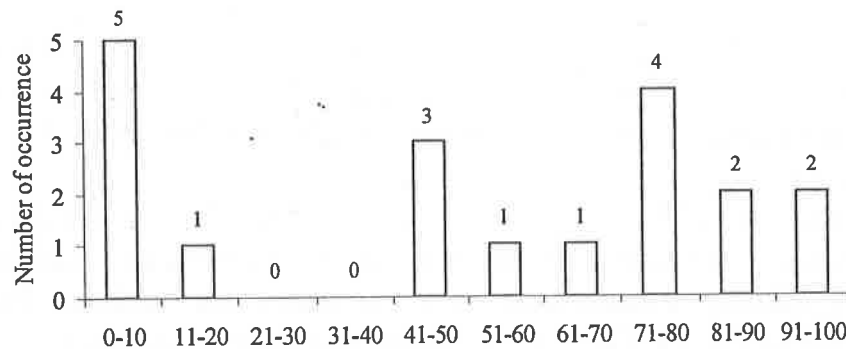


Figure 6: Distribution of percent deviation from E-R for observed parameters

Conclusion

As per the evaluation by the mode of the Captive Elephant Welfare Parameters, the M.C.Zoological Park, Chatbir gets a rating of 4 out of 10, which is below average. It is apparent that the Zoo elephants would have needed to move out if the Zoo did not have the resources of forest and river, both being essential for the wellbeing of elephants. With the option available to change the zoo model to that of a rescue center model, the objectives of the CZA and the Zoo may be met to exercise the ban in its full scope as well as for the Zoo to retain their animals, if they succeed in changing their vision.

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National Zoological Park, New Delhi

Abstract

The National Zoological Park, New Delhi, maintains two Asian elephants, male and female and one male African elephant. In November 2009, the Central Zoo Authority (CZA) imposed a ban on the keeping of elephants in zoos. Following this directive, a committee was set up to examine cases for those zoos which had requested for exemption from such a directive. The Delhi Zoo was one of them. Hence, a team of the elephant appraisal committee visited the zoo and reviewed the welfare status of the elephants.

The overall welfare status of the elephants showed a deviation of 72% from norms prescribed by experts for captive elephants. Features affecting welfare were lack of suitable space, curbs on free movement due to chaining, absence of water-bodies and lack of access to the one existing in the enclosure. In other words, fewer opportunities to express species-specific behaviours.

It is recommended that the elephants be shifted to locations with suitable space, allowing for foraging opportunity and unrestricted movement without separating the present group.

Recommendations

The elephants in this zoo do not seem to have adequate veterinary care and availability of infrastructure. The male elephant, as per medical records, was deemed "not fit for carrying out routine activities in Corbett Tiger Reserve." The female elephant has a treatment history of liver disorder and a right fore limb injury. Besides, there is evidence both by observation and veterinary records, that they have foot pad conditions and overgrown nail cuticles, which if not addressed will cause future problems. The mahout situation, too, seemed not very stable with the current mahouts not having adequate and confident control of the animals. The major drawback for this facility is the absence of sufficient space, opportunity to forage in a natural environment for the elephants and curtailed movement due to chaining.

- It is recommended that the elephants are not moved to any National Park or Forest Camp, since they may be unable to cope with the management and activity regimes of camp elephants.
- It is recommended that they are not separated from each other. All three elephants have lived together for 12 to 30 years and would constitute a near - natural family group. The 14 year old African male has known only the companionship of these two Asian elephants from the age of two years and could become wild and uncontrollable if separated from them. Separation from each other can have disastrous physical and emotional consequences for these animals.
- It is recommended that interaction with international vets who have carried out surgical procedures for vasectomy / castration overseas to allow Indian vets exposure to such procedures to allow exploration of these procedures (castration / vasectomy) for management of elephants in India. Currently some procedures using laparoscopic surgery (a minimally invasive procedure utilizing fiber optic instruments) have been used to sterilize African bull elephants by Dr Jeffery Zuba, head veterinarian at the San Diego Zoo's Wild Animal Park, who believes there is a way for African elephants to live peacefully, without having to resort to isolation or permanent loneliness. Dr Zuba has vasectomized 13 bulls till date.
- The Delhi Zoo may immediately make functional the new, unused elephant enclosure which is significantly better than the existing one. Both enclosures can be used for the animals, especially if the males are in musth and need isolation without being chained for 24 hours.
- The Chatbir Zoo had shown interest and is viable in terms of space, expertise and other resources. They had expressed interest to develop an Elephant Park. The three elephants consisting of the current herd members of the Delhi Zoo may be shifted there, where they could enjoy the best of protected space as well as natural movement and access to forest space, foraging, grazing, stall-feeding and other facilities to which they have been used.

- The Delhi Zoo has an option to outsource , specifically, the elephant management to an external agency in an effort to upgrade and improve the existing situation.
- Last option to be considered would be for all three elephants to be moved to a rehabilitation camp (not a Forest Camp or Tiger Reserve) where they could have access to more natural conditions that would reflect in opportunities to express species-specific behavior and individualized care.

Introduction

The National Zoological Park, New Delhi, established in 1959, is spread over 196 acres and houses diverse species of animals. It is the only zoo in India managed by the Ministry of Environment and Forests, Government of India. Among the animals maintained are two Asian elephants (*Elephas maximus*), both aged 32 years, and one African elephant (*Loxodonta africana*), aged 14 years. Both the Asian elephants were gifted by the Kanpur zoo, whereas the African species was gifted to India by the President of Zimbabwe in 1998.

Request for exemption from the zoo directive on zoo elephants

1. In November 2009, the Central Zoo Authority (CZA) imposed a ban on the keeping of elephants in zoos. Following this directive, an Appraisal Committee was set up to examine cases of the zoos which had requested for retention of their elephants. The Delhi Zoo was one such zoo which had applied for an exemption. Hence, a team of the elephant evaluation committee comprising of Mrs. Suparna Baksi Ganguly, (Hon.) President & Co-Founder Trustee, CUPA (Compassion Unlimited Plus Action) & WRRRC (Wildlife Rescue & Rehab Center), and Mr. Kartick Satyanarayan, Director & Co-Founder, Wildlife SOS, visited the Delhi Zoo on 13.08.2010. In addition to the zoo elephants' evaluation team, the following officials were present:

1. Delhi Zoo Director – Shri Amitabh Agnihotri
2. Zoo Veterinarian – Dr. Paneer Selvam
3. Range Officer – Shri Manoj Kumar

Method

The investigation of the elephant facility at National Zoological Park, Delhi was conducted on 13 August, 2010 by Mrs. Suparna Bakshi Ganguly (CUPA & WRRC, Bangalore) and Mr. K. Satyanarayanan (WSOS). Welfare status of the elephant kept in this facility has been assessed considering the physical environment, social and behavioral features along with availability and access to veterinary personnel and facilities. Data was collected through observation of animal/s and interview of personnel/management, representing various aspects of the elephant's life in captivity. The data was grouped into different categories (parameters) based on its identity in terms of physical/social/ managerial/ physiological relevance to the animal. Each of the observed parameters was then rated on a scale ranging from suitable to unsuitable.

The rating method

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

- The experts, based on their concept of the importance of a particular parameter to an elephant, developed rating for each parameter. For example mean expert rating of 8.0 (SE= 0.5, N=29) for a parameter 'floor' and 9.0 (SE=0.4, N=31) was arrived for 'source of water' from the ratings suggested by each expert.
- A mean rating for each parameter, across all the participating experts, has been used as the Experts' Rating (E-R) which represents the importance attached to a parameter.
- Elephants were visited on the ground; data for each parameter was collected by direct observations or with the interviews of people associated the animal. Mean Rating (M-R) was calculated for a given parameter, along with its sub-parameter. Thus the Mean Rating (M-R)

denotes welfare status of existing conditions on the ground for the particular parameter.

- For example, if an elephant is exposed only to natural flooring, the animal receives a M-R of 8 and for entirely unnatural flooring the value is 0; if an animal is exposed to both natural and unnatural flooring, the value is 4 (as $8+0/2=8/2=4$). If an elephant is exposed to a natural water source, such as a river, it receives a value of 9; if the source of water is large lakes or reservoirs, it gets 4.5. A value of 3.5 is assigned for small water bodies like tanks and ponds. Tap water (running) gets 2.5 and if only buckets, pots, and tankers are in use, then the allocated value is 0.5.
- In this investigation, variables which represent a common feature of the captive condition have been grouped to form a parameter. For example, the variables shelter type, shelter size, floor type in the shelter; all represent different aspects of the physical space provided to the elephant. Hence, they are grouped together to form the parameter "Shelter" and each constituent variable is a sub-parameter. In this investigation, the E-R for a parameter (say, shelter) represents the mean of E-Rs across all related sub-parameters. M-R is also based on similar lines.
- E-R and M-R for each of the regimes represent the average across related parameters observed for the regime. For instance, E-R / M-R for a parameter "Shelter" represents the average of related parameters (termed sub-parameters) such as type, flooring, size, and shade availability.
- Results have been presented comparing E-R and M-R as a means of comparing the extent of deviation present in the parameters observed. The difference between E-R and M-R (expressed as percentage) indicates deviations from the prescribed norm.
- N refers to number of individuals; N* refers to number of sub-parameters

Welfare status of elephants in the zoo

The following parameters were observed and the ratings give an indication of the welfare status of the elephants:

Source

Millspaugh et al., (2007) report increased levels of fecal glucocorticoid metabolites among elephants subject to transportation; these metabolites are considered to be an indicator of stress. Added to this, elephants are subjected to altered daily routines in their new locations. This change in living environment is even more drastic for wild caught individuals.

- Two Asian elephants were acquired from Kanpur Zoo at the age of two years and have since lived together for 30 years in this zoo
- The African elephant was wild caught in its native country (Zimbabwe) and gifted to this zoo at the age of two years and has since lived with the other two for the past 12 years

M-R for source was 1.0 (SE= 0.6, N=3) showing a deviation of 83% from E-R.

Shelter (enclosure)

Wild elephants cover vast distances across varied landscape as part of their home-range (Sukumar, 2006). In captivity, this space can be severely restricted or devoid of variation, leading to possible insufficiency of exercise and/or psychological stimulation.

- The entire zoo encompasses an area of little over 200 acres
- The Asian elephant enclosure spans an area of ½ acres. The area is cordoned off by a moat, so the animals are confined within this zone. Additionally, they are tied with chains on their feet in a concrete enclosure within this zone.
- The elephants are left free for short periods in the moated enclosure with space for wallowing mud bath, dry space, water points, rubbing areas and shaded areas

M-R for shelter was 2.0 (SE= 1.1, N*= 4) indicating a deviation of 75% from E-R. Figures 1 and 2 give comparative ratings and percent deviation from ER, respectively, for each of the sub-parameters.

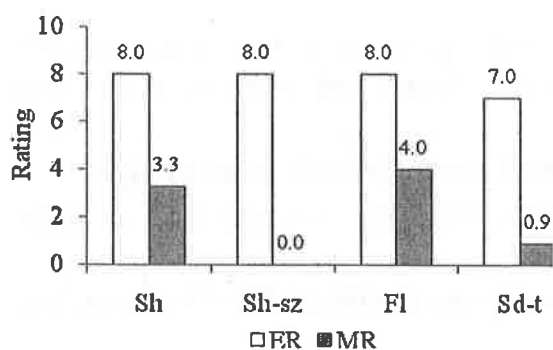
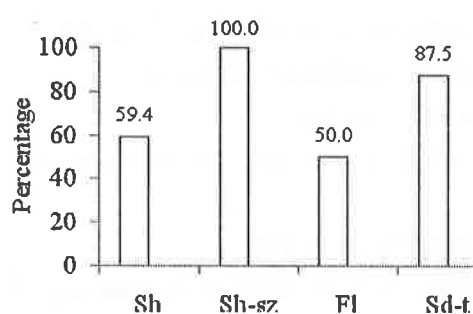


Figure 1: Comparison of ER and MR for shelter sub-parameters



Sh: Shelter type Sh-sz: Shelter size Fl: Flooring
Sd-t: Shade type

Figure 2: Percent deviation from ER for shelter sub-parameters

Water source

Opportunities to bathe/ drink water when needed by elephants are reduced or unavailable depending on the source of water available and provision for free movement for the elephants.

- Drinking water was acquired from a bore well source (through taps), implying dependence on handlers for access to water
- The elephants are bathed by means of a water hose pipe in the area outside enclosure
- There is a concrete shallow depression in the enclosure for bath/wallow purpose, but was not in use during the period of the visit

M-R for water source was 1.1 (SE= 0.0, N= 3) showing a deviation of 87.5% from E-R.

M-R for bathing place was 0.9 (SE= 0.0, N= 3) with a deviation of 87.5% from E-R.

Sleep

Size of the sleeping area could form a limiting factor in providing suitable conditions as restrictions imposed through chains and reduced space will hinder free movement of the animal.

- The elephants are chained in separate concrete enclosures at night
- Each enclosure can hold an elephant, but free movement on all sides is not possible

M-R was 0.0 (SE= 0.0, N= 3) showing complete deviation (100%) from ER.

Opportunity to Walk

Poole and Granli (2009) state wild elephants traverse vast distances as they forage/search for mates. While captivity ensures availability of food, provision for movement is restricted due to various factors.

- All the elephants have extremely limited exposure to movement, exercise or walking
- The elephants are confined to their enclosures at night

M-R for opportunity to walk was 4.0 (SE= 0.0, N= 3) with a deviation of 56% from E-R.

M-R for walk duration was 0.0 (SE= 0.0, N= 3) showing 100% deviation from E-R.

Social Interaction

Wild elephants are known to live in matriarchal herds of related individuals; bonds between individuals lasting across generations (Poole and Moss, 2008). Dependent males live in these groups, till their dispersal following sexual maturity. McKay (1973) observed non-aggressive interactions among wild males comprising different ages. In captivity, this maybe altered by managerial/husbandry decisions regarding the composition of the herd, duration for interaction, space for appropriate behavioural response, etc.

- The zoo has 1 female and 1 male Asian elephant, both 32 years old. One African male elephant is aged 14 years.
- The elephants are not allowed to interact when in their night enclosures
- When left free in the enclosure, most of the animals lingered around one spot, close to each other. Sub-adult African elephant was observed to be affectionately interacting with the other two Asian elephants

M-R was 2.4 (SE= 0.9, N*= 3) indicating a deviation of 70% from E-R. Figures 3 and 4 give comparative ratings and percent deviation from ER, respectively, for each of the sub-parameters.

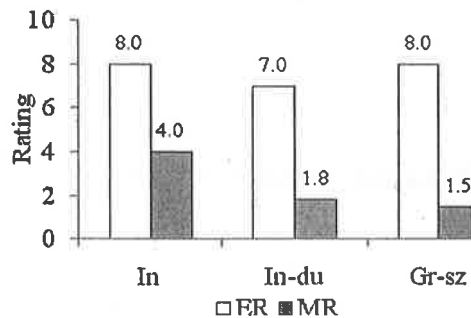
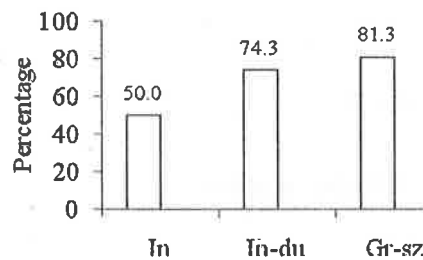


Figure 3: Comparison of ER and MR for interaction sub-parameters



In: Opportunity for interaction

In-du: Duration of interaction

Gr-sz: Group size

Figure 4: Percent deviation from ER for shelter sub-parameters

Chaining

Use of chains has a physical as well as a psychological effect: abrasive action of chains on the skin can lead to wounds (Kurt and Garai, 2007), increased frequency of stereotypic

behavior was observed among chained elephants (Gruber et al., 2000).

- The elephants are tied with chains on their feet in a concrete enclosure
- They are chained for 12-15 hrs
- Free-ranging is allowed within the moated enclosure when the elephants are not chained

M-R was 2.0 (SE= 1.4, N*= 3) implying a deviation of 75% from E-R. Figures 5 and 6 give comparative ratings and percent deviation from ER, respectively, for each of the sub-parameters.

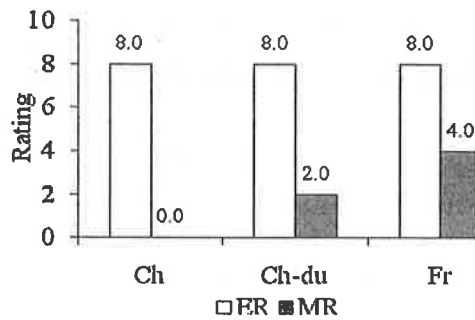
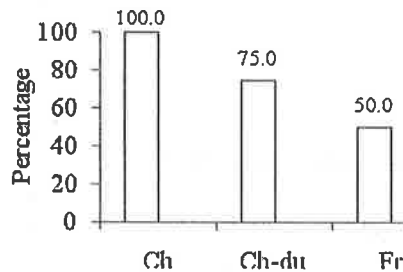


Figure 5: Comparison of ER and MR for chaining sub-parameters.



Ch: Chaining status

Ch-du: Chaining duration

Fr: Opportunity for free-ranging

Figure 6: Percent deviation from ER for chaining sub-parameters

Behaviour

Occurrence of stereotypic behavior is considered to be an indicator of poor welfare conditions.

- All the elephant exhibited stereotypic behavior when chained M-R was 0.0 (SE= 0.0, N= 3) showing 100% deviation from E-R.

Food provisioning

Foraging forms a significant activity for wild elephants, spending 12-18h feeding, consuming diverse vegetation (more than 100 species of plants have been recorded) (Sukumar, 2006).

- All elephants were given only stall feed
- Diet given to the elephants , without any variation of food types are : Rice-6 kgs, Jaggery- 3 kgs, Dry fodder – 450 kgs, Green fodder – 100 kgs, Salt – 0.3 kgs, Sugarcane – 300 kgs., Wheat – 3 kgs., Green gram – 3 kgs., Turmeric powder – 0.3 kgs., Banana – 18.3 kgs.

M-R for food provisioning was 0.0 (SE= 0.0, N= 3) with 100% deviation from E-R.

M-R for number of food items provided was 5.0 (SE= 0.0, N= 3) with a deviation of 44% from E-R.

Reproductive status

In captivity, normal reproductive functioning maybe absent or curtailed due to absence of individuals of opposite sex/ husbandry decisions to keep individuals separate.

- The group comprised of adult male and female elephants
- The male Asian elephant had history of regular musth and had, reportedly, a history of injuring keepers
- Musth had not yet been reported for the African male elephant

M-R was 5.3 (SE= 3.3, N*= 3) showing a deviation of 33% from E-R. Figures 7 and 8 give comparative ratings and percent deviation from ER, respectively, for each of the sub-parameters.

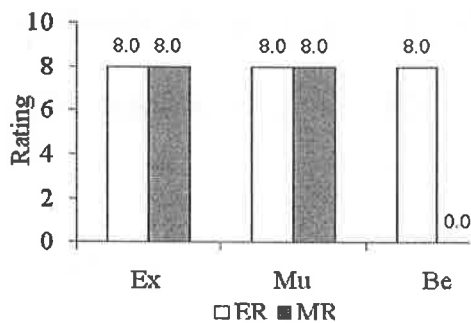
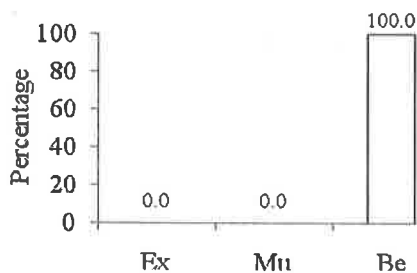


Figure 7: Comparison of ER and MR for reproductive status sub-parameters



Ex: Exposure to individuals of opposite sex Mu: Occurrence of musth

Be: Behaviour during musth

Figure 8: Percent deviation from ER for reproductive status sub-parameters

Medical status and routine veterinary care

Conditions imposed in captivity may predispose the elephants to health problems: lack of exercise/ inadequate exercise may lead to foot problems (Olson, et al., 1994).

- There seemed to be an absence of regular veterinary care
- A veterinary examination done by Veterinary Officer, Corbett Tiger Reserve in February 2010 reveals that the female elephant suffers from arthritis, fracture and subsequent healing, injury, sprain, nutritional disorder, a history of liver disorder, inadequate exercise, hard keeping ground, suspected podo-dermatitis, presence of sole abscesses and toe nail cracks
- No medical record of the African elephant was presented to the committee.
- The Asian male elephant, at the period of examination by the veterinary doctor, was in musth and could not be examined.

M-R for nature of disease/injury was 0.0 (N= 1) with complete deviation from E-R.

M-R availability of veterinary care was 4.5 (SE= 0.0, N=3) with 50% deviation from E-R.

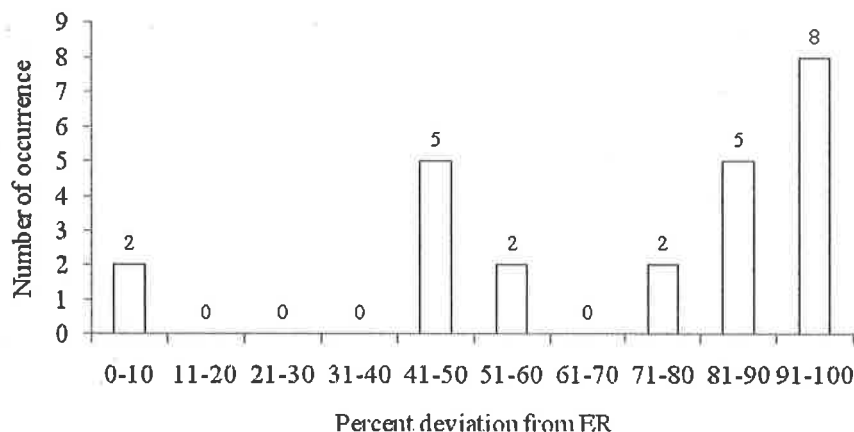


Figure 9: Distribution of percent deviation from E-R across observed parameters

Overall welfare status of elephants

Overall M-R, across all observed parameters, was 2.2 (SE= 0.5, N*= 24) implying a deviation of 72% from E-R. That is, on an average, a deviation of 72% from norms prescribed by experts could be observed.

Figure 9 gives the distribution of each of the deviations across all observed parameters. 88% of all the parameters (N*= 24) showed deviations of 50% or more from E-R. While the number of parameters observed was 24, representing 27% of 90 reviewed by experts, each of the parameters covered important aspects of captivity— both physical aspects as well as biological aspects. With availability of information on more parameters, however, the rating may change.

The following features were not suitable for the elephants:

- Restricted physical space: the elephants were exposed to an open area of only _____. Movement was also curtailed when the animals were chained in their concrete enclosures
- Reduced opportunity to walk/forage within a small, uniformly vegetated enclosure
- Ponds/ wallows were not available
- Social interaction was restricted in time and number of individuals available
- Veterinary care was not available within the zoo

The overall view of the zoo was that opportunities for expression of species-typical behaviours was restricted due to insufficient space and absence of appropriate vegetation within the enclosure, chaining of the animals, absence of free-ranging opportunity and restricted number of individuals.

Response of officials

The officials are concerned that if the elephants are taken to a forest camp they may not be able to adjust to the rigors of forest life. They expressed concern that the elephants were not used to forest conditions or walking long distances in search of fodder. However, they admitted that their elephant keeping has many shortcomings that were due to an unstable and inexperienced mahoutry and lack of expert knowledge.

Details of elephant and mahouts in Delhi Zoo

Raj Laxmi – Female – 32 years – Asian Elephant
Heera Gaj - Male - 32 years - Asian Elephant

Shankar - Male - 14 years – African Elephant

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Bannerghatta Biological Park, Bengaluru

Abstract

The Bannerghatta Biological Park (BBP) maintains eleven Asian elephants, male and female. In November 2009, the Central Zoo Authority (CZA) imposed a ban on the keeping of elephants in zoos. Following this directive, a committee was set up to examine cases wherein zoos requested for exemption from such a directive. The BBP zoo applied for an exemption from this directive. Hence, a team of the elephant evaluation committee visited the zoo and reviewed the same.

Recommendations

The presence of the National Park gives these elephants a huge advantage in terms of their welfare, with reference to their movement, feeding, foraging and other typical behaviors.

The elephants in this zoo seem to have relatively good veterinary care and infrastructure availability. The female elephants have given birth to numerous calves. **The major drawback for this facility is the absence of sufficient space and opportunity in their daytime display enclosure to engage in play, bathe, forage or graze in a natural environment. Confinement need not be in the form of chaining the animal; limited space itself restricts movement and consequent expression of species-typical behaviors.** Formation of socially cohesive groups with its essential component of exercising the option to stay or leave a group cannot be implemented in a restricted physical space.

It is recommended that the elephants be given increased space for the elephants to display natural behavior as the BBP is now expanding its current zoo facilities, failing which they may like to develop a specific elephant center / elephant park where they could have access to more natural conditions that would reflect in their species-specific behavior, exercise, walking, bathing and chance to choose, to some extent, their forage and food. It is also recommended that a substantial portion of their time be spent in foraging and grazing, since it would alleviate their boredom and lack of activity during the day time.

The zoo elephants must not be used for giving joy rides to visitors and tourists to BBP.

The habit of the elephant keeping staff of collecting tips from visitors in exchange for giving blessings should be strictly discouraged.

The zoo management should explore new and advanced ways of imparting training to calves and juveniles, using the positive reinforcement method instead of the traditional way of separation and breaking the spirit of the animal.

Option of consolidating BBP and Mysore Zoo (elephant herds in case Mysore Zoo wishes to send their elephants to BBP (* To be read with reference to Sri Chamarajendra Zoological Gardens report)

Since the Mysore Zoo has severe limitation of space and opportunity for exercise, it has been recommended (in the appraisal report of Sri Chamarajendra Zoological Gardens) that the 8 elephants from the Mysore Zoo (5 females and 3 males) may be integrated with the current herd of BBP (8 females and 2 males) if they are unable to provide additional space for their existing herd. It was informed to the committee members during the appraisal visit that BBP is planning to develop an Elephant Park as a part of their expansion program. Since all the elephants referred to in this report are from related herds, the possibility of successful integration increases. Thus, all these elephants consisting of the current related herd members of BBP and the Mysore Zoo totaling 18 elephants would enjoy the best of protected space as well as natural movement and access to forest space, foraging, grazing or stall-feeding and other facilities to which they have been used.

Additional revenue could be generated by BBP from this Elephant center and used for the upkeep and maintenance of the elephants.

Reproduction of the female elephants in BBP

The increased reproduction of elephants at BBP is a serious cause for concern as this will increase the elephant numbers while creating space constraints and increasing financial liability for the zoo in question. The zoo must ensure reproductive control while preventing further breeding or fresh acquisition.

Females with weak bonds and low group relatedness had significantly lower reproductive output. (Long-Term Impacts of Poaching on Relatedness, Stress Physiology, and Reproductive Output of Adult Female African Elephants. K S Gobush, B M Mutayoba, and S K Wasser CONSERVATION BIOLOGY, August 28, 2008) Females from disrupted groups, had significantly lower reproductive output than females from intact groups, despite many being in their reproductive prime. **These studies suggest that the presence of old, related matriarchs have resulted in greater fecundity and successful birthing pattern in both BBP and Mysore Zoo.**

If the zoo elephant population increases any further, this will be a matter of concern as it will also impact on the BBP and Bannerghatta National Park landscape where free ranging wild elephants also forage throughout the year.

The zoo may explore population control in its herds using the new method of contraception - immuno-contraceptive program. This has been developed in South Africa over the last 8 years and can curb the problem of overpopulation without substantial side effects. It is a very simple process and works on the elephant's immunity while retaining

the female elephant's hormone levels or oestrus cycle, upon which much of the female's social interactions are based. It also doesn't cause herd fragmentation, harassment by bulls, a change in social rank or other disruptive behaviors that have been documented with the use of hormonal contraceptive methods.

For the welfare of the animals and for minimizing the impact of their presence in the Bannerghatta National Park, it is essential that elephant numbers are not increased any further through birth or acquisition. The present system of free ranging and foraging in the natural forest on daily basis can be continued.

Introduction

The Bannerghatta Biological Park is approx 733 hectares, out of which the built up area is only 200 hectares. The rest are natural dry deciduous forests dotted with many perennial water bodies, where the zoo elephants have free ranging and foraging for part of the day and whole night. The zoo maintains twelve Asian elephants, male and female. One cow elephant, Menaka, was confiscated from a local temple in July 2007 and housed in BBP.

Request for exemption from the zoo directive on zoo elephants

In November 2009, the Central Zoo Authority (CZA) imposed a ban on the keeping of elephants in zoos. Following this directive, a committee was set up to examine cases wherein zoos requested for exemption from such a directive. The Mysore zoo applied for an exemption from this directive. Hence, a team of the elephant evaluation committee comprising of Mrs. Suparna Baksi Ganguly, (Hon.) President & Co-Founder Trustee, CUPA (Compassion Unlimited Plus Action) & WRRC (Wildlife Rescue & Rehab Center), and Mr. Kartick Satyanarayan, Director & Co-Founder, Wildlife SOS, visited the zoo on August 31st, 2010. In addition to the zoo elephants' evaluation team, the following officials were present:

1. Mr. M.N. Jayakumar
Member Secretary,
Additional Principal Chief Conservator of Forests
Zoo Authority of Karnataka, Mysore
2. Mr. Millo Tago
Executive Director - BBP
3. ACF, BBP
4. RFO, BBP
5. Dr. Chitiappa
Senior Veterinarian - BBP

Basis for exemption

The CZA directive on shifting elephants from zoos is based on the need to improve welfare status of elephants currently being maintained in various zoos across the country and reduce the incidence of accidental negative interaction between the public and display elephants. In order to improve the welfare status of elephants, zoo elephants were directed to be shifted to provide natural physical conditions and allow for better expression of species-typical behaviours. Hence, this report is aimed at evaluating welfare status of the elephants in Bannerghatta Biological Park, as a basis for a decision on the maintenance of elephants in the zoo.

Method

The appraisal of the Elephants and the facilities at BBP, Bangalore was conducted on 2nd September, 2010 by Mrs. Suparna Baksi Ganguly (CUPA, Bangalore) and Mr. Kartick Satyanarayanan (Wildlife SOS - India).

Welfare status of the elephant kept in this facility has been assessed considering the physical environment, social and behavioural features along with availability and access to veterinary personnel and facilities. Data was collected through observation of animal/s and interview of personnel/management, representing various aspects of the elephant's life in captivity. The data was grouped into different categories (parameters) based on its identity in terms of physical/social/ managerial/ physiological relevance to the animal. Each of the observed parameters was then rated on a scale ranging from suitable to unsuitable. The ratings presented in this report are based on the data collected during the All-India Captive Elephant Survey, modified to include only Asian elephants and updated with the latest information.

The rating method

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

- The experts, based on their concept of the importance of a particular parameter to an elephant, developed rating for each parameter. For example mean expert rating of 8.0 (SE= 0.5, N=29) for a parameter 'floor' and 9.0 (SE=0.4, N=31) was arrived for 'source of water' from the ratings suggested by each expert.
- A mean rating for each parameter, across all the participating experts, has been used as the Experts' Rating (E-R) which represents the importance attached to a parameter.

- Elephants were visited on the ground; data for each parameter was collected by direct observations or with the interviews of people associated the animal. Mean Rating (M-R) was calculated for a given parameter, along with its sub-parameter. Thus the Mean Rating (M-R) denotes welfare status of existing conditions on the ground for the particular parameter.
- For example, if an elephant is exposed only to natural flooring, the animal receives a M-R of 8 and for entirely unnatural flooring the value is 0; if an animal is exposed to both natural and unnatural flooring, the value is 4 (as $8+0/2= 8/2= 4$). If an elephant is exposed to a natural water source, such as a river, it receives a value of 9; if the source of water is large lakes or reservoirs, it gets 4.5. A value of 3.5 is assigned for small water bodies like tanks and ponds. Tap water (running) gets 2.5 and if only buckets, pots, and tankers are in use, then the allocated value is 0.5.
- In this investigation, variables which represent a common feature of the captive condition have been grouped to form a parameter. For example, the variables shelter type, shelter size, floor type in the shelter; all represent different aspects of the physical space provided to the elephant. Hence, they are grouped together to form the parameter "Shelter" and each constituent variable is a sub-parameter. In this investigation, the E-R for a parameter (say, shelter) represents the mean of E-Rs across all related sub-parameters. M-R is also based on similar lines.
- E-R and M-R for each of the regimes represent the average across related parameters observed for the regime. For instance, E-R / M-R for a parameter "Shelter" represent the average of related parameters (termed sub-parameters) such as type, flooring, size, and shade availability.
- Results have been presented comparing E-R and M-R as a means of comparing the extent of deviation present in the parameters observed. The difference between E-R and M-R (expressed as percentage) indicates deviations from the prescribed norm.

Observations on Asiatic Elephants housed in BBP

The zoo has 11 (2:9) elephants in its possession. There are 9 female and 2 male elephants housed in the zoo with ages ranging from 72 years to 1 year. Of these, 3 had been captured from the 1968 Khedda operations, 7 have been born at the zoo itself, and 1 was rescued from abusive conditions in a local temple.

The 11 elephants are looked after by total of 14 mahouts / kavadis.

The elephants, in order of their ages, are:

1. Gayathri, female, 72 years, captured in 1968 Khedda operations (calved 7 times)
Mahouts – Manikanta & Kalappa Mutta
2. Lilly, female, 57 years, captured in 1968 Khedda operations (calved 5 times)
Mahouts - Raja & Manu
3. Suvarna, female, 35, calf of Kokila, born at BNP (calved 5 times)
Mahouts - Nagaraj
4. Vanaraja, male, 32 years old, captured in the 1968 Khedda operations
Mahouts – Mota & Ramesha
5. Vanitha, female, 26 years, calf of Suvarna, born at BNP (calved 3 times)

Mahouts – Lingappa & Kumar

6. Veda, female, 11 years, calf of Vanitha, born at BBP

Mahouts - Bhaskara

7. Nisharga, female, 7 years, calf of Vanitha, born at BBP

Mahouts - Shivaji

8. Vanashree, female, 3 years, calf of Suvarna, born at BBP

Mahouts - Bhimaraj

9. Rupa, female 2 years, calf of Vanitha, born at BBP

Mahout - Raja

10. Gajendra, male, 1 year, calf of Suvarna, born at BBP

11. Maneka, female, 21 years, confiscated from local temple Mahout - Devaraja

Observations on Asiatic Elephants housed in BBP

Enclosure size

Temporary enclosure/exhibition for public is in an area of 25.00 x 12.20 (305.00 Sq Mtrs). Display is confined only during the day for about 5 – 6 hours each day, thereafter they are sent back to natural forests in BBP and BNP for free ranging foraging.

Proposal is also under active consideration to relocate the present temporary enclosure/exhibition centre to a larger and natural forest area near by Butterfly Park.

Exercise

During the nights the elephants are allowed to forage in the natural forest of the BBP / BNP (from around 4 pm to about 830 AM the next morning) following which the mahouts bring the elephants back to the BBP Zoo premises for display. The elephants are bathed and scrubbed in a large pond available within the Zoo premises. Thereafter, they are displayed in the Zoo premises until late afternoon. Some natural shade is available in the display enclosure.

Social Interaction

Wild elephants are known to live in matriarchal herds of related individuals; bonds between individuals lasting across generations (Poole and Moss, 2008). In captivity, this maybe altered by managerial/husbandry decisions regarding the composition of the herd, duration for interaction, space for appropriated behavioural response, etc.

- All elephants have opportunity to interact with each other within this display enclosure although space was a severe constraint.
- The zoo has 9 female and 2 male elephants with ages ranging from 72 to 1 year.
- Elephants are used for joy-rides for the zoo visitors.
- At the time of the appraisal visit, it was observed that the confiscated elephant Menaka was usually tied in isolation outside the display enclosure and not allowed to interact with the other elephants in the display enclosure.

Food

Diet given to all the 10 elephants (11th is one year old calf), without any variation of food types, are : Rice-10 kgs, Jaggary-2 kgs, Coconut-2 Nos, Green Grass – 55 kgs, Castrol oil -100ml, Neem Oil-50 ml. Only the green grass and rice are varied in quantity for the juveniles. They are supplemented with minerals and vitamins.

Medical status

As per information given by the BBP authorities, all 11 animals seem to have similar medical case sheets and foot/skin records. . No medical problems have been reported in the records, of any nature whatsoever.

History of colic, diarrhea, GI parasitism (including fecal parasite screen and Salmonella cultures)	Nil
Serologic status, if known (EMC, EEHV, Leptospirosis) Blood collection	Nil
Serologic (ELISA) test for elephant herpes virus if available.	Nil
Reproductive/musth history	
Sedation/immobilization data	Nil
Intestinal parasite screen	It is done every sixth month. Latest screening done on 16.04.2010
Enteric pathogen screen	Carried out as and when required
TB testing	Not done
Vaccination (Tetanus toxoid, Rabies vaccine, Leptospirosis vaccine)	Not done

Response of officials

The ZAK and BBP officials are cognizant of the fact that the elephants have an insufficient and inappropriate display area and expressed their interest in giving better facilities for the elephants and were keen to retain the elephants in the BBP zoo. The CZA elephant appraisal committee members were shown the proposed area to the slated spot for the rescue center/ ENP near the Butterfly Park.

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Arignar Anna Zoological Park (AAZP), Vandalur, Chennai,

PREAMBLE:

Subsequent to the 2009 ban on keeping captive elephants at zoological parks, many zoos filed a request to the CZA to exempt their facility from the ban, citing old age, health and inability of their elephants to adjust to forest camp conditions. A committee was formed to verify the authenticity of these claims and suggest immediate measures. The Arignar Anna Zoological Park (AAZP) in Vandalur, Tamil Nadu applied for an exemption; hence the zoo was visited by two of the committee members – Smt Suparna Ganguly and Kartick Satyanarayan.

Basis for exemption

The CZA directive on shifting elephants from zoos is based on the need to improve welfare status of elephants currently being maintained in various zoos across the country and reduce the incidence of accidental negative interaction between the public and display elephants. In order to improve the welfare status of elephants, zoo elephants were directed to be shifted to provide natural physical conditions and allow for better expression of species-typical behaviors. Hence, this report is aimed at evaluating welfare status of the elephants in Arignar Anna Zoological Park (AAZP) in Vandalur, Tamil Nadu, as a basis for a decision on the maintenance of elephants in the zoo.

RECOMMENDATIONS:

Elephant section of AAZP should have a different identity as a rehabilitation or care center.

Management of rescue and care center in the existing framework is strongly recommended. The AAZP should fulfill the role of a rescue center, till the construction of the Trichy Rescue Center is completed. This would bring in more resources of skill and technical knowledge and the transition can be made easily, with shared team responsibility. The effort can be jointly supported by CZA, Project Elephant Directorate and external sources.

AAZP can be a role model for an efficient elephant rescue and care center. Keeping in mind incidents of orphaned wild calves being brought into the zoo, the zoo should initiate efforts at providing a naturalistic framework for elephants to express species-specific behaviors as this would help in framing a long-term policy for a possible future release into the wild.

It was learnt that certain private and religious institutions and temples are pressurizing the AAZP to hand over elephant calves and it is strongly recommended that the AAZP and the Tamil Nadu Forest Dept (CWLW) must not succumb to such pressure to hand over their calves or sub-adults to private institutions who are no way comparable to the facilities the zoo has.

Elephants that are deeply attached to one another should not be separated for sake of convenience by sending back isolated to forest camp or elsewhere. It was learnt by the committee members that there have been past instances where young elephants have been given to private religious institutions / temples who have then returned the elephant when the animal has become of an age when it is difficult to maintain and then demanding that the elephant be replaced by another younger animal thereby treating the Zoo like a

dumping ground of elephants they no longer want. This should be discouraged.

By entering into this phase of their development, AAZP may get much recognition and appreciation to better the lives and conditions of this iconic, keystone species and also make it a research center for scientists, visitors and students.

METHODOLOGY:

The appraisal of the elephants and the elephant facility at AAZP (Chennai) was conducted on 31st August, 2010 by CZA Committee members - Mr. Kartick Satyanarayanan and Mrs. Suparna Baksi Ganguly.

Terms of reference to evaluate welfare:

Based on the workshop on Welfare Parameters and their Significance for Captive Elephants and their Mahouts in India, held at Bangalore in May 2008, a publication titled "Welfare and Management of Elephants in Captivity" had been developed, with the initiative supported by the Project Elephant, Ministry of Environment and Forests (MoEF).

These standards were used to determine present conditions and advise future options.

Welfare status of the elephant kept in this facility has been assessed considering the physical environment, social and behavioral features along with availability and access to veterinary personnel and facilities. Data was collected through observation of animal/s and interview of personnel/management, representing various aspects of the elephant's life in captivity. The data was grouped into different categories (parameters) based on its identity in terms of physical/social/ managerial/ physiological relevance to the animal. Each of the observed parameters was then rated on a

scale ranging from suitable to unsuitable; conditions were considered suitable if they were similar to those observed in the wild, in addition, veterinary facilities were also rated. The ratings presented in this report are based on the data collected during the All-India Captive Elephant Survey, updated with the latest information. The rating method is presented in Annexure 1.

ACKNOWLEDGEMENTS

We are grateful to the AAZP officers viz. Shri K.S.S.V.P.Reddy IFS - C.C.F. & Director, and

1. Dr.R.Thirumurugan - Zoo Veterinary Assistant Surgeon
2. K.S.Sathyamoorthy - Assistant Conservator of Forests
3. K.Manivannan - Forest Range Officer
4. Dr.M.Sekar - Biologist.

INTRODUCTION:

AAZP is spread over an area of 602 hectares of protected forest. The elephant enclosure occupies about 7 hectares of this zone.

The zoo has 8 (5:3) elephants in its possession. The elephants are:

1. Madavan, male, 45 years old, seized in 2009, from Cuddalore, following complaints of abuse and illegal ownership. Originally from Kerala

2. Ashwini, female, 28 years old, transferred in 2008 from Topslip
3. Abinaya, female, 7 years old, rescued from Krishnagiri
4. Saravanan, male, 27 months old, rescued from Sathyamangalam
5. Narasimman, male, 22 months, rescued from Narasipuram RF, Coimbatore
6. Urigam, male 14 months, rescued from Urigam, Hosur
8. Giri, male, 11 months, rescued from Javalgiri, Hosur
7. Baby, female, less than a week old, rescued from Mettupalayam forests.

WELFARE STATUS OF OBSERVED ELEPHANTS:

Source

Shifting of elephants across locations involves breakage of established bonds and introduction of new elephants into a group (Clubb and Mason, 2002) Transportation itself can be a negative experience. Each of these could act as a source of stress.

Of the eight individuals, six were rescued from the wild

One was confiscated from abuse

One elephant was transferred from a Forest Camp in Tamil Nadu

M-R was 2.4 (SE= 0.7, N= 7) showing a deviation of 61% from E-R.

Enclosure (shelter)

Keeping in mind that elephants are long-ranging species and in prime elephant habitat (Sukumar, 1989) wild elephant densities are estimated to be two elephants/ km² (Varman, et. al., 1995) and this may translate into 125 acres/animal.

The elephants' enclosure occupies about seven hectares. This represents only 1% of the total area available to the zoo

10.30a.m. - 05.30p.m.: Elephants are allowed free in the enclosure (Grass, tree leaves are fed in the exhibit area)

06.00p.m.- 06.00a.m.- Tethered with chains, for the entire night
M-R was 4.5 (SE= 1.7, N*= 6) with a deviation of 43% from E-R.
Figures 1 and 2 represent comparative ratings and percent deviation, respectively, for each of the sub-parameters.

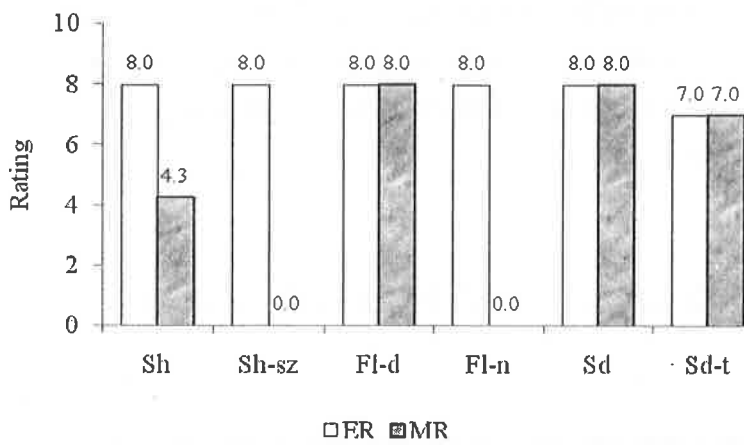
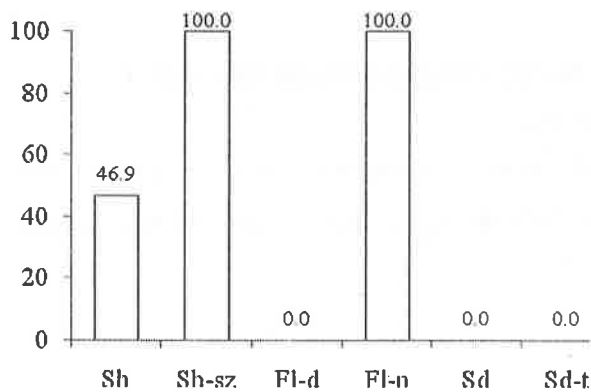


Figure 1: Comparison between E-R and M-R for shelter sub-parameters



Sh: Shelter type Sh-sz: Shelter size Fl-d: Flooring (day)
Fl-n: Flooring (night) Sd: Shade availability
Sd-t: Shade type

Figure 2: Percent deviation from E-R for shelter sub-parameters

Water availability and related parameters:

In captivity, elephants have restricted access to water, either by tethering or due to unsuitable water sources such as taps or buckets.

Elephants were provided water from wells and bore-wells (through taps)

Ponds and mud-wallows were available in their enclosure

Elephants were bathed at 8a.m. by their handlers

M-R was 2.5 (1.8, N*= 4) showing a deviation of 69% from E-R.

Figures 3 and 4 represent comparative ratings and percent deviation, respectively, for each of the sub-parameters.

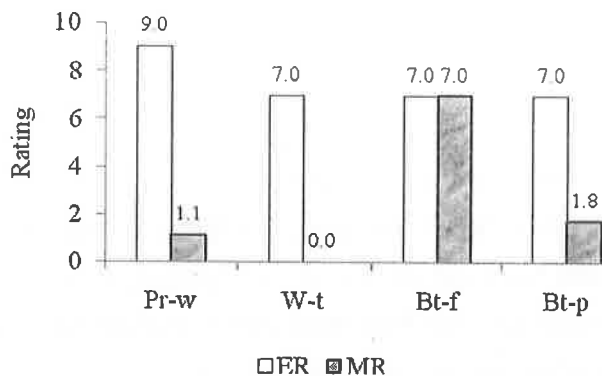
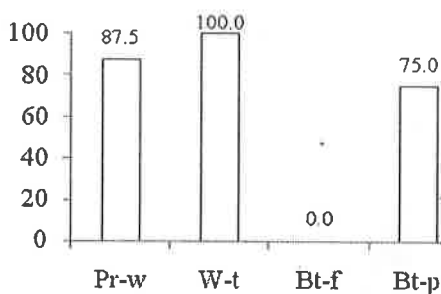


Figure 3: Comparison between E-R and M-R for water sub-parameters



Pr-w: Perennial source of running water
water quality

W-t: Tests on

Bt-f: Bathing frequency

Bt-p: Bathing place

Figure 4: Percent deviation from E-R for water sub-parameters

Opportunity to walk / exercise

Walking can be a source of physical exercise as well as psychological stimulation if elephants are allowed the opportunity to express species-specific natural behaviour.

Between 6-8a.m. elephants were walked around the zoo. From 10:30a.m. to 5:30p.m. the elephants were left free in their enclosure. M-R for opportunity to walk was 9.0 (SE= 0.0, N= 7) showing no deviation from E-R.

M-R for duration of walking was (SE= 0.0, N= 7) implying a deviation of 75% from E-R.

Food provisioning

The range of forage plants consumed by elephants in the wild is hard to replicate in captivity not only because of limitations of available space but also from lack of diversity in vegetation.

Elephants are allowed to graze in the forested area inside the zoo (Grass, tree leaves are provided in the exhibit area)

Concentrates are fed at 10a.m. and 5:30p.m.

M-R was 6.6 (SE= 1.2, N*= 5) showing a deviation of 18% from E-R. Figures 5 and 6 represent comparative ratings and percent deviation, respectively, for each of the sub-parameters.

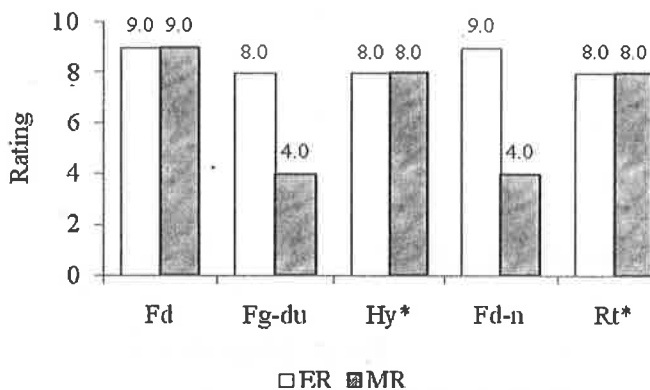
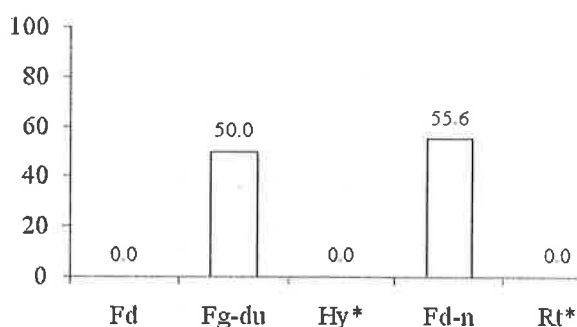


Figure 5: Comparison between E-R and M-R for food sub-parameters



Fd: Food provisioning type Fg-du: Duration of foraging Hy:
 Hygiene of feeding place (observed for two elephants only)
 Fd-n: Number of stall fed items Rt: Use of ration chart
 (observed for two elephants only)

Figure 6: Percent deviation from E-R for water sub-parameters

Health status

Exposure to exotic species in captivity may predispose elephants to certain diseases. Thus, health status along with adherence to prescribed veterinary schedule is important in maintaining normal health of the elephants.

For Abhinaya: Skin: Supple & pliable, Foot: sole - proper wear and tear; No toenail cracks, No Overgrown nails present, Treated for cuticular abscess; Treated for diarrhea of infectious origin. No culture and sensitivity tests performed

For Giri: Skin: Supple & pliable, Foot: sole - proper wear and tear; No toenail cracks, No Overgrown nails present

For Madhavan: Skin: Supple & pliable, Treated for chain wounds. Foot: sole - proper wear and tear; Horizontal toenail cracks in left fore, Overgrown nails present in both the forelegs

For Narasimhan: Skin: Supple & pliable, Foot: sole – proper wear and tear; No toenail cracks, No Overgrown nails present

For Ashwini: Skin: Supple & pliable; Foot: sole – proper wear and tear; No toenail cracks; No overgrown nails.

For Saravanan: Skin: Supple & pliable, Foot: sole – proper wear and tear; No toenail cracks, No Overgrown nails

For Baby (female calf): Skin: Supple & pliable, Foot: sole – NAD; No toenail cracks

For Urigam: Skin: Supple & pliable, Foot: sole – proper wear and tear; No toenail cracks, No Overgrown nails present. Treated for diarrhea of dietary origin

Annual vaccination against Anthrax was done

Haematology and serology tests performed

Intestinal parasitic screening done once a month

M-R was 7.6 (SE= 0.2, N*= 5) with a deviation of 4.5% from E-R.

Figures 7 and 8 represent comparative ratings and percent deviation, respectively, for each of the sub-parameters.

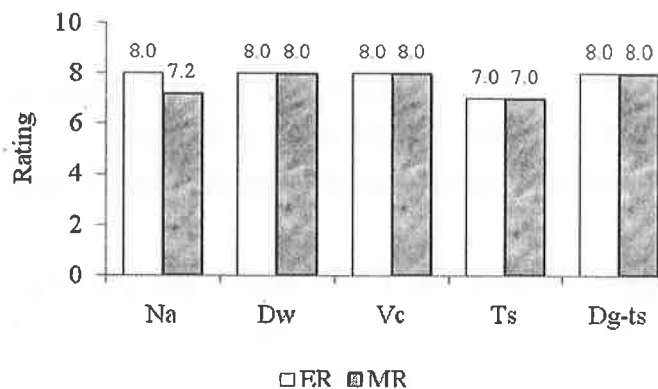
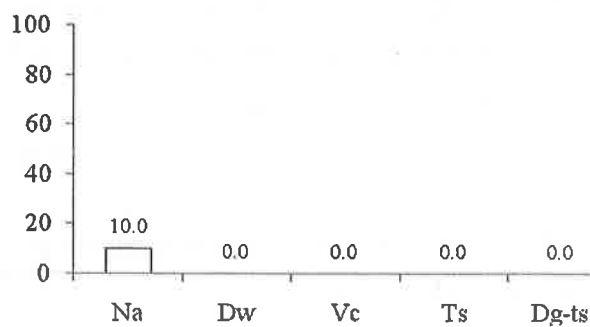


Figure 7: Comparison between E-R and M-R for health sub-parameters



Na: Nature of disease/ injury

Dw: Deworming status

Vc: Vaccination status

Ts: Blood tests done

Dg-ts: Dung sample tests

Figure 8: Percent deviation from E-R for health sub-parameters

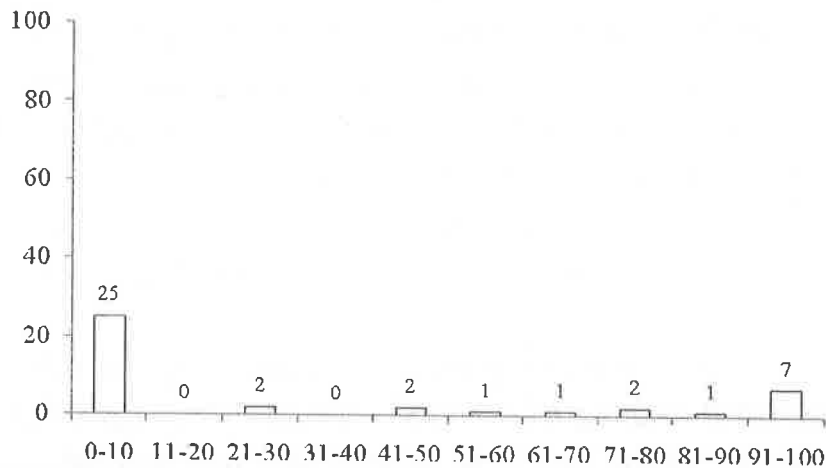


Figure 9: Distribution of percent deviation from E-R across observed parameters

OVERALL WELFARE STATUS

The overall welfare rating, considering all parameters together, was 5.7 (SE= 0.5, N*= 41) showing a deviation of 29% from E-R. It would imply an average deviation of nearly 30% from norms prescribed by experts. Figure 9 gives the distribution of deviations for each of the parameters/sub-parameters observed. 32% of the observed parameters deviated to the extent of 50% or more from E-R. These parameters were related to shelter, water, food, etc., (Annexure II).

DISCUSSION

The zoo provided a mix of positive and negative features. Positive features were the opportunity provided to the elephants to range-

free in their enclosure and engage in species-typical activities to the extent possible. Veterinary care and facilities showed minimum deviation from prescribed norms. This was, however, offset by restricting several aspects of the elephants' lives: limited duration of free-ranging in a restricted physical space and chaining of elephants at night. Equally, if not more importantly, the group size and composition seems to have changed drastically in the five years since the last All India Captive Elephant survey (2005). The group changed from a mix of a pair of male and female elephants in prime age (16-40y) along with juveniles (male/female) in 2005 to a group comprising of a single adult female and a more than 40y old male along with juveniles (males only) and a female calf, in 2010. Only two females from the 2005 survey remained in the zoo in 2010.

This change in composition is significant considering the efforts by the zoo in successful rearing of rescued orphans from the wild. If the long term policy of the zoo is to rehabilitate rescued calves, then efforts should be to retain herd structure and composition which will enable the same. The presence of a matriarch is important in elephant society, who along with "nannies," keeps the herd together (Sheldrick, 2009). Frequent changes of elephants due to shifting to different locations/ management systems may prove to be deleterious to the individual as well to those remaining in the zoo.

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Annexure I

Assessment of welfare through rating values – how to reach conclusion on management and welfare status: apart from a detailed investigation of the welfare aspects through identification of parameters of welfare significance, each of the parameters was rated on a scale of 0–10 as a measure of the welfare status of the elephant under study. Ten represents satisfactory condition and 0 represents bad condition for the animal for that parameter. The suitability of a parameter depends on the replication of near natural conditions for the animal. Any feature which provided conditions experienced by the animal in the wild state is given a rating of ten. The greater the deviation from the natural condition or environment, the lesser the rating accorded to that parameter.

The rating method

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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.

Elephants were visited on the ground; data for each parameter was collected by direct observations or with the interviews of people associated the animal. Mean Rating (M-R) was calculated for a given parameter, along with its sub-parameter. Thus the Mean Rating (M-R) denotes welfare status of existing conditions on the ground for the particular parameter.

For example, if an elephant is exposed only to natural flooring, the animal receives a M-R of 8 and for entirely unnatural flooring the value is 0; if an animal is exposed to both natural and unnatural flooring, the value is 4 (as $8+0/2= 8/2= 4$). If an elephant is exposed to a natural water source, such as a river, it receives a value of 9; if the source of water is large lakes or reservoirs, it gets 4.5. A value of 3.5 is assigned for small water bodies like tanks and ponds. Tap water (running) gets 2.5 and if only buckets, pots, and tankers are in use, then the allocated value is 0.5.

In this investigation, variables which represent a common feature of the captive condition have been grouped to form a parameter. For example, the variables shelter type, shelter size, floor type in the shelter; all represent different aspects of the physical space provided to the elephant. Hence, they are grouped together to form the parameter "Shelter" and each constituent variable is a sub-parameter. In this investigation, the E-R for a parameter (say, shelter) represents the mean of E-Rs across all related sub-parameters. M-R is also based on similar lines.

E-R and M-R for each of the regimes represent the average across related parameters observed for the regime. For instance, E-R / M-R for a parameter "Shelter" represent the average of related parameters (termed sub-parameters) such as type, flooring, size, and shade availability.

Results have been presented comparing E-R and M-R as a means of comparing the extent of deviation present in the parameters observed. The difference between E-R and M-R (expressed as percentage) indicates deviations from the prescribed norm.

N represents number of individuals and N* refers to number of sub-parameters.

Ratings presented here are a combination of ratings obtained from the All India Captive Elephant Survey (2005) and the 2010 visit by members of the Committee.

Annexure II

Ratings for observed parameters:

Source	
ER	6.0
MR	2.4
SD	1.70084
SE	0.7
N	7

Shelter	
ER	8.0
MR	4.5
SD	3.8
SE	1.7
N	6.0

Water	
ER	7.5
MR	2.5
SD	3.1
SE	1.8
N	4.0

Sleeping place	
R	8.0
MR	0.0
SD	0
SE	0.0
N	7

SE	1.8
N	4.0

Walk	
ER	9.0
MR	5.5
SD	4.949747
SE	
N	2

Interaction	
ER	8.0
MR	7.3
SD	1.2
SE	0.8
N	3.0

Chaining	
ER	8.0
MR	4.0
SD	5.656854
SE	
N	2

Behaviour	
ER	9.0
MR	4.5
SD	6.363961
SE	
N	2

Food	
Water	
ER	8.0
MR	2.5
SD	3.1
SE	1.8
N	4.0

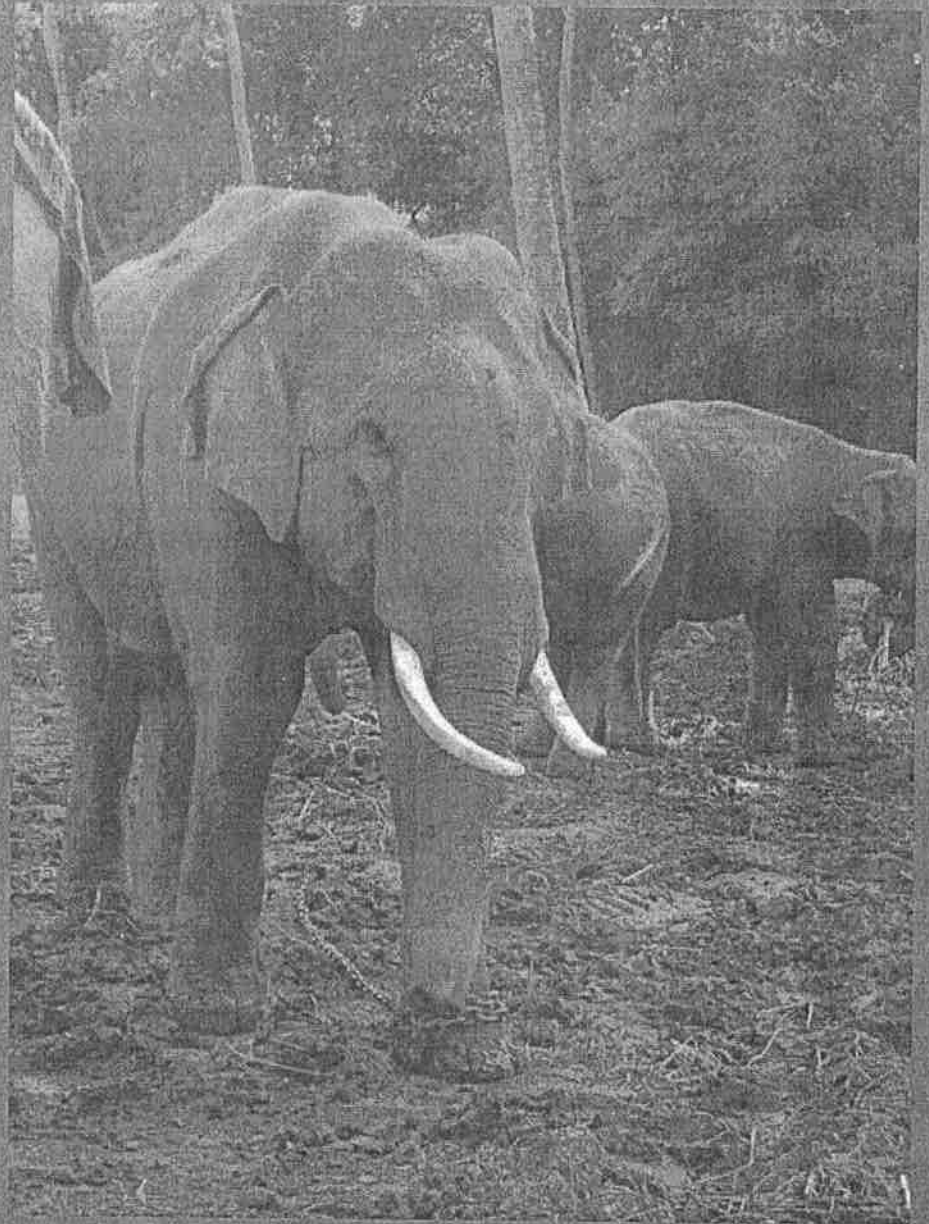
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ER	8.0
MR	5.3
SD	4.6
SE	3.3
N	3.0

Health	
ER	8.0
MR	7.6
SD	0.5
SE	0.2
N	5.0

Veterinary care	
ER	8.0
MR	7.8
SD	1.2
SE	0.5
N	6.0

Sri Chamarajendra Zoological Gardens, Mysore



Abstract

The Sri Chamarajendra Zoological Garden (Mysore zoo), maintains eight male and female Asian elephants. In November 2009, the Central Zoo Authority (CZA) issued a directive banning the keeping of elephants in zoos. Following this directive, a committee was set up to examine cases wherein zoos requested for an exemption. The Mysore zoo applied for an exemption stating that zoo elephants could be a source of infection to wild elephants and other wildlife if left in the National Park and that they were a source of attraction and education for the public and tourists to the zoo. Hence, a team of the elephant appraisal committee visited the zoo and reviewed the maintenance, upkeep and housing of the same.

Recommendations

The elephants in this zoo appears to have relatively good veterinary care and availability of infrastructure, with the female elephants having given birth to young. The major drawback for this facility is the absence of sufficient space and opportunity to forage in a natural environment..

It is recommended that the elephants are moved to a protected center where they could have access to more natural conditions that would reflect in their species-specific behavior, exercise, walking, bathing in lakes or river and chance to choose, to some extent, their forage and food. It is also recommended that some portion of their time be spent in grazing, since it would alleviate their boredom and lack of activity.

1. It was learnt that Mysore Zoo has access to an adjacent reserve forest area where the elephants can be given access to this area to enable them to have opportunity to forage and display natural behavior for the maximum time possible on a daily basis. If this option is actioned then the animals may be retained in the Mysore zoo as it will be in the best interest of the elephants. It must be ensured strictly that elephants are not to be used for joyrides.
2. Alternatively, since Bannerghatta Biological Park (BBP), Bangalore is planning to develop an Elephant Center, all the elephants consisting of the current related herd members of the Mysore Zoo could be shifted to Bannerghatta, where they could enjoy the best of protected space as well as natural movement and access to forest space, foraging, grazing, stall-feeding and other facilities to which they have been conditioned to in their life at Mysore Zoo.
3. If option two is selected by Mysore Zoo, then Revenue from the proposed Elephant center at the Bannerghatta Biological Park (deemed as an Elephant Camp/Rescue & Care Center) can be used for the upkeep and maintenance of the facility.

Introduction

The Sri Chamarajendra Zoological Garden (Mysore zoo), which was established in 1892, is spread over an area of 80 acres housing diverse species of animals. The zoo maintains eight Asian elephants, male and female.

Request for exemption from the zoo directive on zoo elephants

In November 2009, the Central Zoo Authority (CZA) imposed a ban on the keeping of elephants in zoos. Following this directive, a committee was set up to examine cases wherein zoos requested for exemption from such a directive. The Mysore Zoo applied for an exemption from this directive. Hence, a team of the elephant appraisal committee comprising of Mrs. Suparna Baksi Ganguly, (Hon.) President & Co-Founder Trustee, CUPA (Compassion Unlimited Plus Action) & WRRC (Wildlife Rescue & Rehabilitation Center), and Mr. Kartick Satyanarayan, Director & Co-Founder, Wildlife SOS, visited the zoo on September 1st, 2010. In addition to the zoo elephants' appraisal team, the following officials were present:

1. Mr. M.N. Jayakumar
Member Secretary,
Additional Principal Chief Conservator of Forests,
Zoo Authority of Karnataka, Mysore
2. Mr. N.T. Vijay Kumar
Executive Director
Mysore Zoo
3. Mr. B.R. Muralidhar Rao
Assistant Engineer
Mysore Zoo
4. Dr. Dhanalakshmi. S.
Veterinary Officer,
Mysore Zoo

Basis for exemption

The CZA directive on shifting elephants from zoos is based on the need to improve welfare status of elephants currently being maintained in various zoos across the country and reduce the incidence of accidental negative interaction between the public and display elephants. In order to improve the welfare status of elephants, zoo elephants were directed to be shifted to provide natural physical conditions and allow for better expression of species-typical behaviours.

Method

The appraisal of the elephants and the elephant facilities at Mysore Zoo was carried out on 1st September, 2010. Welfare status of all elephants housed in this facility was assessed considering the physical environment, social and behavioral features along with availability and access to veterinary personnel and other facilities. Data was collected through observation of animal/s and interview of mahouts, personnel/management, representing various aspects of the elephant's life in captivity. The data was grouped into different categories (parameters) based on its identity in terms of physical/social/ managerial/ physiological relevance to the animal. Each of the observed parameters was then rated on a scale ranging from suitable to unsuitable. The ratings presented in this report are based on the data collected during the All-India captive elephant survey, modified to include only Asian elephants.

The rating method

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

- The experts, based on their concept of the importance of a particular parameter to an elephant, developed rating for each parameter. For example mean expert rating of 8.0 (SE= 0.5, N=29) for a parameter 'floor' and 9.0 (SE=0.4, N=31) was arrived for 'source of water' from the ratings suggested by each expert.
- A mean rating for each parameter, across all the participating experts, has been used as the Experts' Rating (E-R) which represents the importance attached to a parameter.
- Elephants were visited on the ground; data for each parameter was collected by direct observations or with the interviews of people associated the animal. Mean Rating (M-R) was calculated for a given parameter, along with its sub-parameter. Thus the Mean Rating (M-R) denotes welfare status of existing conditions on the ground for the particular parameter.
- For example, if an elephant is exposed only to natural flooring, the animal receives a M-R of 8 and for entirely unnatural flooring the value is 0; if an animal is exposed to both natural and unnatural flooring, the value is 4 (as $8+0/2= 8/2= 4$). If an elephant is exposed to a natural water source, such as a river, it receives a value of 9; if the source of water is large lakes or reservoirs, it gets 4.5. A value of 3.5 is assigned for small water bodies like tanks and ponds. Tap water (running) gets 2.5 and if only buckets, pots, and tankers are in use, then the allocated value is 0.5.
- In this investigation, variables which represent a common feature of the captive condition have been grouped to form a parameter. For example, the variables shelter type, shelter size, floor type in the shelter; all represent different aspects of the physical space provided to the elephant. Hence, they are grouped together to form the parameter "Shelter" and each constituent variable is a sub-parameter. In this investigation, the E-R for a parameter (say,

shelter) represents the mean of E-Rs across all related sub-parameters. M-R is also based on similar lines.

- E-R and M-R for each of the regimes represent the average across related parameters observed for the regime. For instance, E-R / M-R for a parameter "Shelter" represents the average of related parameters (termed sub-parameters) such as type, flooring, size, and shade availability.
- Results have been presented comparing E-R and M-R as a means of comparing the extent of deviation present in the parameters observed. The difference between E-R and M-R (expressed as percentage) indicates deviations from the prescribed norm.

Observations on Asiatic Elephants housed in Mysore Zoo

There are 5 female and 3 male elephants housed in the zoo with ages ranging from 56 years to 3 years. Of these, 2 have been received from the forest camps of the Karnataka Forest department, 3 have been captive bred and 3 were rescued from different forest divisions. The 8 elephants are looked after by 4 mahouts/handlers.

Source

Bringing elephants into captivity from the wild can be stressful to the elephants due to the change experienced. Change (positive/negative) in living conditions can be experienced by the elephants even when they are moved from one location to another. Only those elephants born in captivity in that location may not undergo any difference in their living conditions.

- Three elephants, two females and a male, were born in the zoo
- Three elephants, three females and a male, had been rescued from the wild
- One adult female and a sub-adult male had been shifted from a forest camp to its present location
-

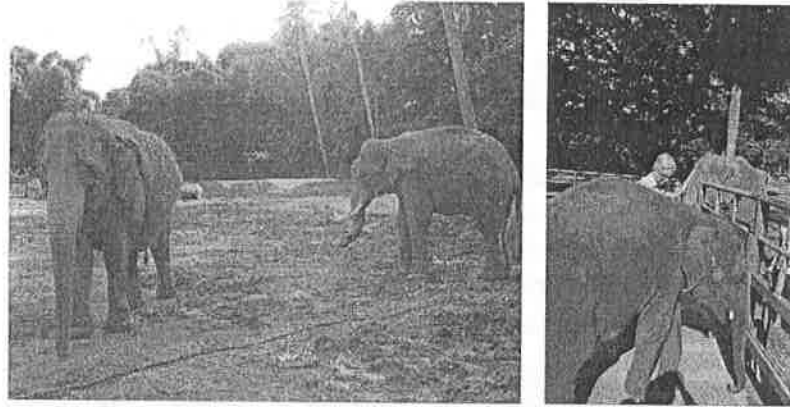
M-R was 4.3 (SE= 0.7, N= 7) with a deviation of 29% from E-R.

Enclosure size

The physical space needed for elephants can be compared with those within which wild elephants survive. Poole and Granli (2009) state elephants are hardly ever still, covering vast distances as part of their home-range. Sukumar (1989) states elephants have home-ranges of 100 – 300 km², subject to habitat quality.

- The entire zoo encompasses an area of little over 79 acres
- The Asian elephant enclosure (about 2.0 acres) represents an area of less than approximately 3% of the zoo area. The moated enclosure confines the animals further reducing the available space. They have no chains on their feet. Most of the animal lingered around one spot, close to each other (Figures 1a and b)

- The elephants are left free in the moated enclosure with space for wallowing (Water Pond – diameter of 15.35m, depth of 1m), mud bath, dry space, water points, rubbing areas and shaded areas



Figures 1a and b: Shelter provided to Asian Elephants in Mysore Zoo

M-R was 4.6 (SE= 1.3, N*= 6) showing a deviation of 43% from E-R. Figures 2 and 3 give the rating for shelter sub-parameters and deviations from E-R, respectively.

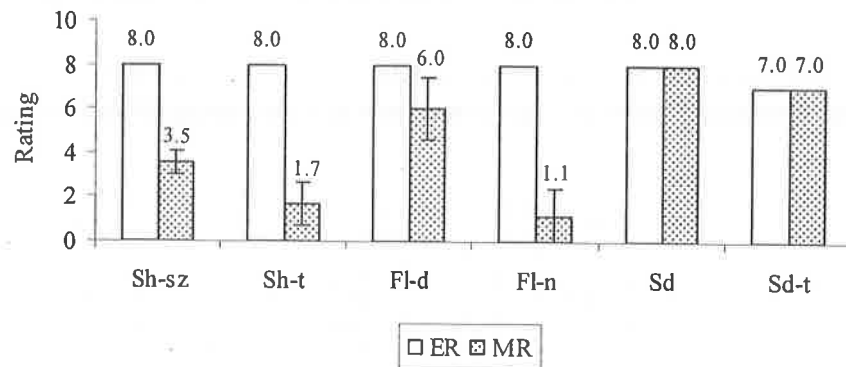


Figure 2: Comparison of E-R and M-R for shelter sub-parameters

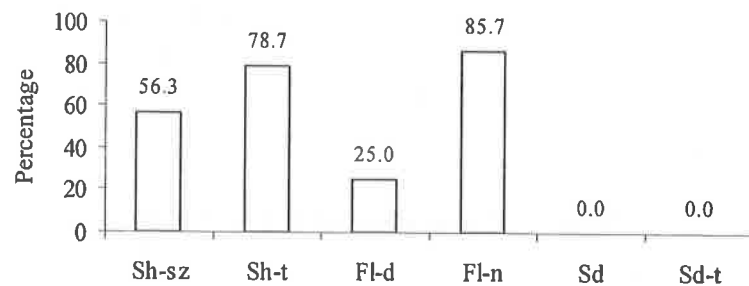


Figure 3: Percent deviation from E-R for shelter sub-parameters

Water source

Access to perennial sources of running water such as rivers will not only provide relatively less contaminated water but also be a source for expression of species-specific activities such as bathing, dust-baths, wallowing, socializing, etc.

- The elephants are bathed by means of a water hose pipe (Figure 4a and b), in the area outside enclosure, when observed.
- There is a concrete shallow depression in the enclosure for bath/wallow purpose, but was not in use during the period of the visit.
- Drinking water was acquired from a bore well source.

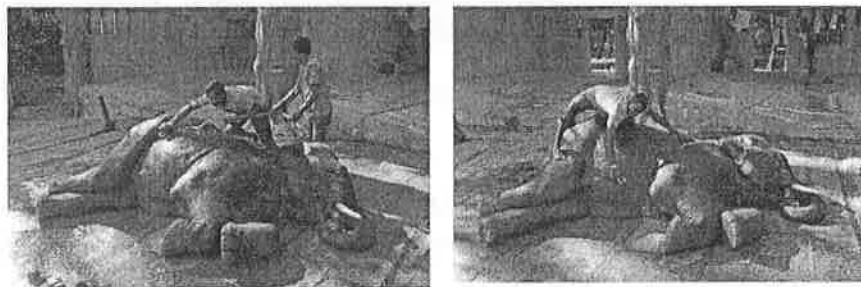


Figure 4a and b: Source of water for Asian Elephants in the zoo

M-R was 3.0 (SE= 0.9, N*= 5) implying a deviation of 62% from E-R. Figures 5 and 6 give comparative rating for water sub-parameters and deviations from E-R, respectively.

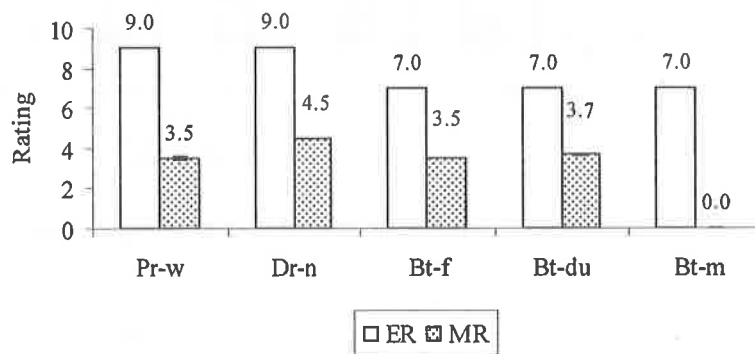


Figure 5: Comparison of E-R and M-R for water sub-parameters

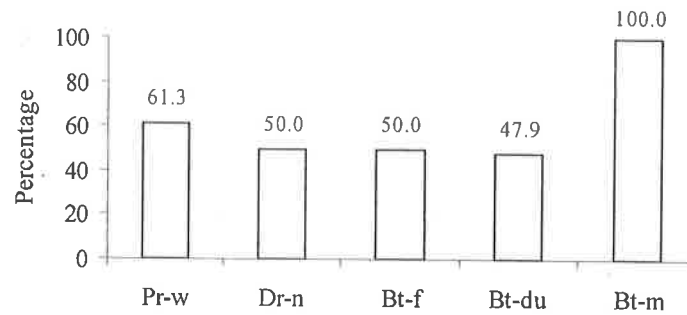


Figure 6: Percent deviation from E-R for water sub-parameters

Exercise

Wild elephants are known to be on the move for most parts of a day (Poole and Granli, 2009). Absence/ inadequate exercise could lead to foot problems for captive elephants (Olson et al., 1994).

- The elephants are left free in the moated enclosure; there is no specific exercise routines for the elephants due to space constraints of the enclosure. Being a city zoo, the animals cannot be taken out for walks since the zoo is located in high traffic density zone.

M-R for opportunity to walk was 9.0 (SE= 0.0, N= 7) showing no deviation for this single parameter.

Social Interaction

Wild elephants are known to live in matriarchal herds of related individuals; bonds between individuals lasting across generations (Poole and Moss, 2008). In captivity, this may be altered by managerial/ husbandry decisions regarding the composition of the herd, duration for interaction, space for appropriated behavioural response, etc.

- The zoo has 5 female and 3 male elephants with ages ranging from 56 years to 3 years, left free in an open enclosure
- Most of the animals lingered around one spot, close to each other (Figure 7)



M-R was 5.5 (SE= 1.9, N*= 3) indicating a deviation of 31% from E-R. Figures 8 and 9 give comparative rating for interaction sub-parameters and deviations from E-R, respectively.

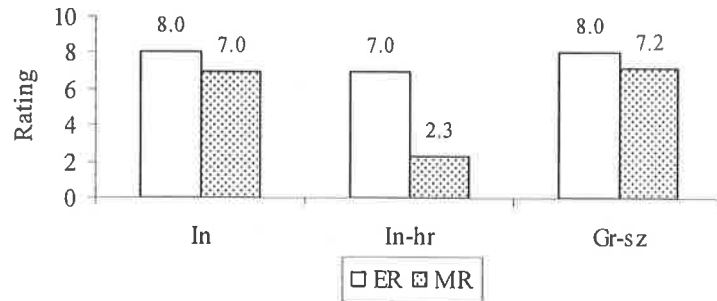


Figure 8: Comparison between E-R and M-R for interaction sub-parameters

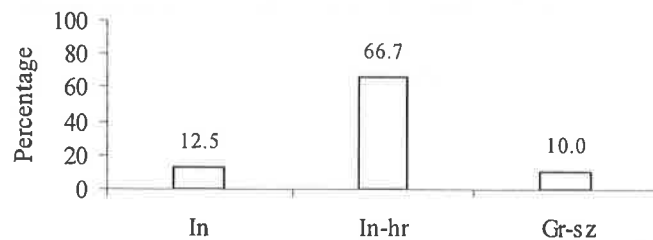


Figure 9: Percent deviation from E-R for interaction sub-parameters

Medical status

Conditions imposed in captivity may predispose the elephants to health problems: lack of exercise/ inadequate exercise may lead to foot problems (Olson, et al., 1994).

- All the elephants are healthy and there is no recorded history of contagious / infectious diseases.

Routine veterinary care includes

- Deworming once in 3 months and as and when required.
- Biannual vaccination against Hemorrhagic septicemia, Foot and Mouth Disease and Black Quarter.
- Regular supplementation of vitamins, minerals, and electrolytes.
- Hygienic measures in the enclosure.
- Routine clinical, hematological and fecal examination.

M-R was 6.4 (SE= 1.0, N*= 8) showing a deviation of 9% from E-R. Figures 10 and 11 give comparative rating for interaction sub-parameters and deviations from E-R, respectively.

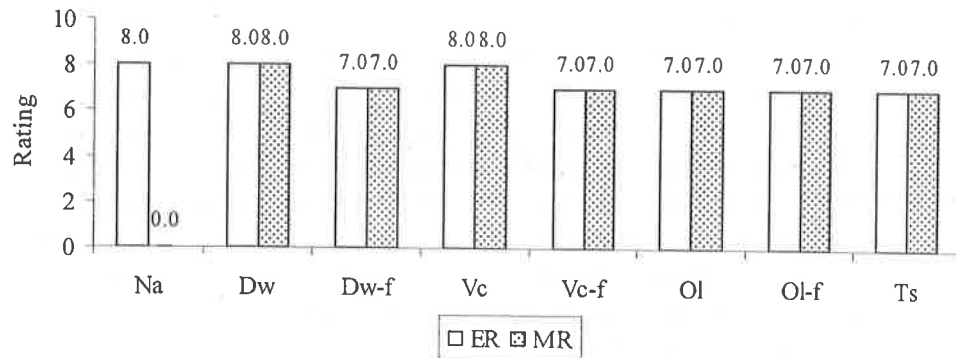


Figure 10: Comparison between E-R and M-R for health sub-parameters

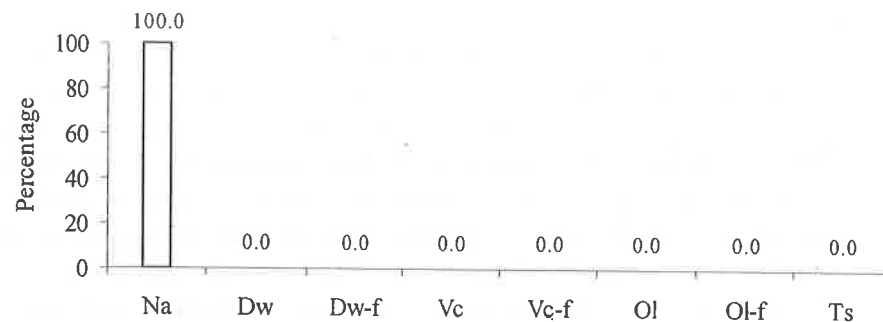


Figure 8: Percent deviation from E-R for health sub-parameters

Welfare status of elephants

Overall rating for the elephants was 5.4 (SE= 0.4, N*= 50) implying a deviation of only 33% from E-R. The mean ratings for various parameters have been presented in Annexure-2.

Response of officials

The officials are concerned that if the elephants are taken to a forest camp they may be a carrier of diseases. They had also expressed concern that the elephants were not used to forest conditions or walking long distances in search of fodder. In view of emerging wildlife diseases, they felt it was wiser to retain them at the Mysore zoo itself.

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Annexure 1: Details of elephants in Mysore zoo

1. Padmavathi
Age: Approximate 56 years
App. D.O.B: 1954
Sex: Female
Source: Received from Karnataka Forest Department on 12/8/1972.
2. Gajalakshmi
Age: 31 years D.O.B: 18.5.1979
Sex: Female,
Source: Captive Bred
3. Rama
Age: Approximate 15 years App. D.O.B: 1995
Sex: Male
Source: Received from Nagarahole on 19/12/1996.
4. Kollegal
Age: Approximate 7 years App. D.O.B: 2003
Sex: Female,
Source: Rescued on 24/1/2004 from Kollegala.
5. Aishwarya
Age: Approximate 7 years App. D.O.B: 2003
Sex: Female,
Source: Rescued from Madikeri on 22/5/2003
6. Airavathi
Age: 7 years D.O.B: 15/11/2003
Sex: Female,
Source: Captive Bred.
7. Abhi
Age: 6 years D.O.B: 7/11/2004
Sex: Male,
Source: Captive Bred.
8. Madesha
Age: Approximate 3 years App. D.O.B: 2007
Sex: Male,
Source: Received from Bandipur on 7/9/2007.

Name of the Animal Keepers:

1. Kallaiah
2. Santhosh
3. Bhaskar
4. Harish



THIRUVANANTHAPURAM ZOO, THIRUVANANTHAPURAM, KERALA

PREAMBLE:

Subsequent to the 2009 ban on keeping captive elephants at zoological parks, many zoos filed their request to the CZA to exempt their facility from the ban, citing old age, health and inability of their elephants to adjust to forest camp conditions. A committee has been formed to verify the authenticity of these claims and suggest immediate measures.

Basis for exemption

The CZA directive on shifting elephants from zoos is based on the need to improve welfare status of elephants currently being maintained in various zoos across the country and reduce the incidence of accidental negative interaction between the public and display elephants. In order to improve the welfare status of elephants, zoo elephants were directed to be shifted to provide natural physical conditions and allow for better expression of species-typical behaviours. Hence, this report is aimed at evaluating welfare status of the elephants in Thiruvananthapuram Zoo.

] Based on the workshop on Welfare Parameters and their Significance for Captive Elephants and their Mahouts in India, held at Bangalore in May 2008, a publication titled “**Welfare and Management of Elephants in Captivity**” has been developed, supported by the Project Elephant, (MoEF). These standards were used to determine present conditions and advise future options.

Welfare status of the elephant kept in this facility has been assessed considering the physical environment, social and behavioural features along with availability and access to veterinary personnel and facilities. Data was collected through observation of animal/s and interview of personnel/management, representing various aspects of the elephant’s life in captivity. The data was grouped into different categories (parameters) based on its identity in terms of physical/social/ managerial/ physiological relevance to the animal. Each of the observed parameters was then rated on a scale ranging from suitable to unsuitable; conditions were considered suitable if they were similar to those observed in the wild, in addition, veterinary facilities were also rated. The ratings presented in this report are based on the data collected during the All-India Captive Elephant Survey, updated with the latest information. The rating method is presented in Annexure I.

OFFICERS PRESENT :

1. Thiruvananthapuram Zoo Officer: Dr. K. Udayavarman, Director, Museums & Zoos
2. Shri K. Jayan, Superintendent, Zoological Garden, Thiruvananthapuram
3. Shri Sadasivan Pillai, Curator Gr.-I, Zoological Garden, Thiruvananthapuram
4. Dr. Joe Jacob S., Veterinary Surgeon, Zoological Garden, Thiruvananthapuram

INTRODUCTION:

Appraisal of the elephant facility at Thiruvananthapuram Zoo was carried out on the 17th December 2010, by Shri Kartick Satyanarayan and Mrs. Suparna Baksi Ganguly - members of the CZA Zoo Elephants Appraisal Committee.

Thiruvananthapuram Zoo occupies 32.023 acres of an urban landscape. Of this, the elephant enclosure occupies only about 300 sq. Mtrs representing 0.002% of the area of the zoo. The zoo has 2 elephants, one male and one female, in its possession. The elephants are:

1. Maheshwari, female, 79 years, wild caught; Mahout's name - Ratheesh
2. Rajkumar, 32 years, transferred from Udyan Zoo, Byculla, Mumbai; Mahout's name - Rajasekharan

OBSERVATIONS:

Source

Acquisition of elephants plays an important role in the welfare status of elephants, as change of living conditions is experienced when elephants are shifted across locations/management systems.

- Of the two individuals, the adult female was wild caught and the adult male acquired from a zoo

M-R was 0.75 (N= 2) showing a deviation of 88% from E-R.

Enclosure (shelter):

This refers to not just the enclosure area available, but also the kind of space, enrichment, opportunity to display natural behavior, access to bathing & wallowing areas, water bodies, exercise areas etc provided to the elephants.

Keeping in mind that elephants are long-ranging species and in prime elephant habitat (Sukumar, 1989) wild elephant densities are estimated to be two elephants/ km² (Varman et. al., 1995), this may translate into 125 acres/animal. When in captivity, an elephant should be housed in an enclosure that provides at least 1% of the space that it would need in the wild, within which natural forest conditions exist in the context of land availability and resource allocation in captive situations. Un-natural substrates such as hard floors can cause long-term health problems in elephants.

- The elephants' enclosure is only about 300 sq.Mtrs which merely represents only 0.002% of the total area available to the zoo

- Elephants have a shed with concrete pillars, concrete floor, metal roofing, and presence of water trough at a distance from the tethering place
- They are always chained in the shed area and not allowed to walk in the 300sq.Mtrs area allotted to them.
- Shade is available through metal roofing

M-R was 0.4 (SE= 0.3, N*= 4) showing a deviation of 95% from E-R. Figures 1 and 2 represent comparative ratings and percent deviation, respectively, for shelter sub-parameters.

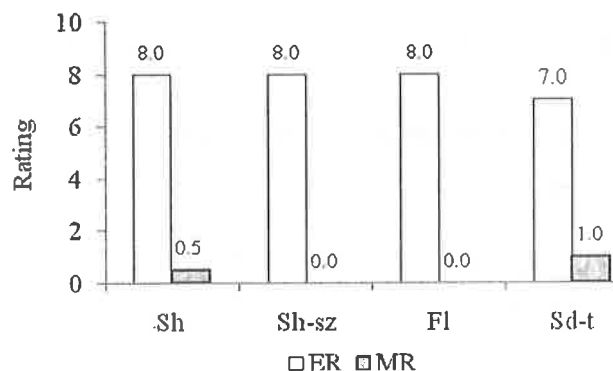
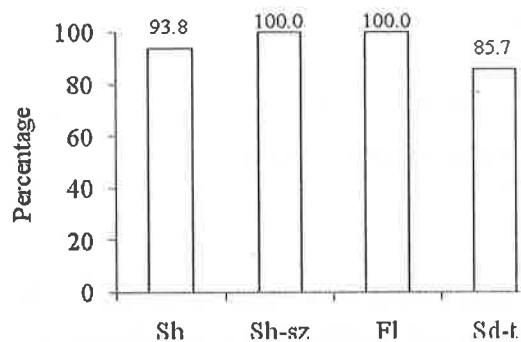


Figure 1: Comparison between E-R and M-R for shelter sub-parameters



Sh: Shelter type Sh-sz: Shelter size Fl: Floor type Sd-t: Shade type

Figure 2: Percent deviation from E-R for shelter sub-parameters

Water and related parameters

Access to water for consumption or for bathing is integral to elephant well-being as it provides for scope to express species-typical activities.

- Elephants were provided bore-well water through pipes in concrete troughs.
 - Bathing place was inside the enclosure and the animals were watered with hose pipe
- M-R was 3.1 (SE= 1.6, N*= 4) with a deviation of 61% from E-R. Figures 3 and 4 represent comparative ratings and percent deviation, respectively, for water sub-parameters.

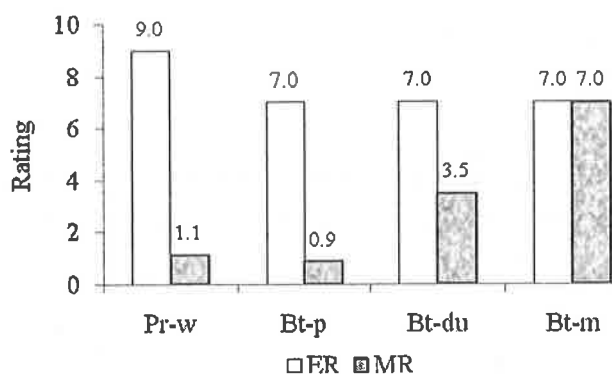
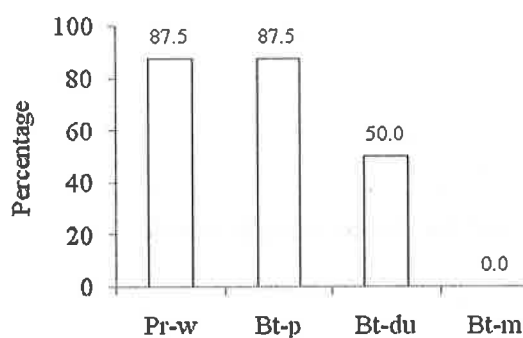


Figure 3: Comparison between E-R and M-R for water sub-parameters



Pr-w: Availability of perennial source of running water
 Bt-du: Bathing duration
 Bt-p: Bathing place
 Bt-m: Bathing materials

Figure 4: Percent deviation from E-R for water sub-parameters

Walk

Absence of exercise can be damaging to elephant health through occurrence of foot problems (Olson, et al., 1994). It can also lead to absence of psychological stimulation in a restricted environment.

- Walk was very restricted in duration and range
- There was no opportunity to free-range

M-R was 3.3 (SE= 3.4, N*= 3) indicating a deviation of 58% from E-R. Figures 5 and 6 represent comparative ratings and percent deviation, respectively, for walk sub-parameters.

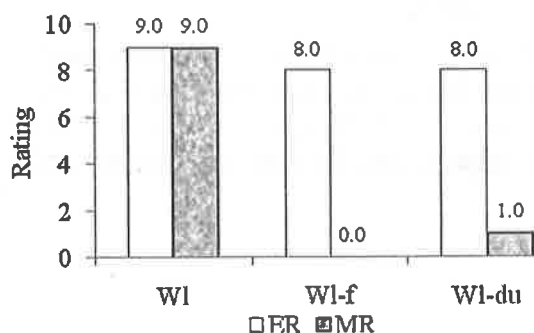
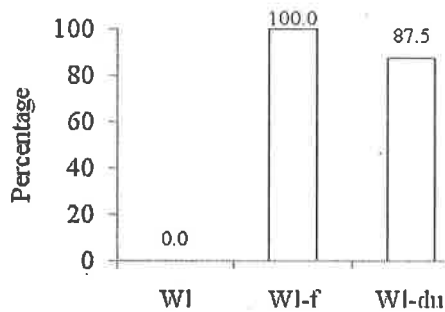


Figure 5: Comparison between E-R and M-R for walk sub-parameters



WI: Opportunity to walk WI-f: Frequency of walks WI-du: Duration of walk
 Figure 6: Percent deviation from E-R for water sub-parameters

Social interaction

Elephant society is said to be a multi-tiered one, spanning across generations (Sukumar, 2006). Even males may associate to form “bull herds” (*op. cit.*).

- Despite the presence of two elephants, opportunity to socialize was not allowed M-R was 0.0 (N=2) showing 100% deviation from E-R.

Food provisioning

Wild elephants feed on diverse plants and plant parts plants (Sukumar, 1991). This variety cannot be replicated when they are provided only stall-feed. Maintenance of ration charts will assist in regulating the elephants’ diet.

- Both elephants were given only stall feed
- The number of food items and quantity are given in Table-1.

M-R was 3.4 (SE= 2.3, N*= 4) implying a deviation of 63% from E-R. Figures 7 and 8 represent comparative ratings and percent deviation, respectively, for food sub-parameters.

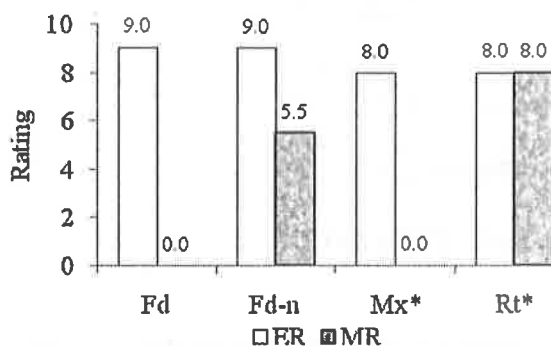
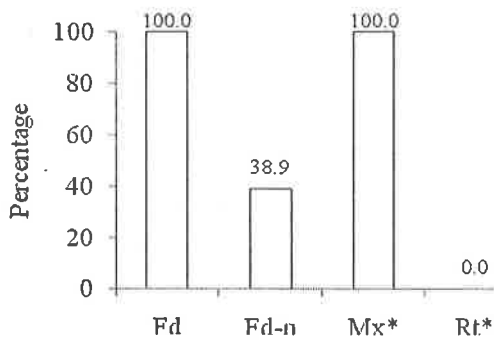


Figure 7: Comparison between E-R and M-R for food sub-parameters



Fd: Food provisioning type Fd-n: Number of food items Mx: Usage of mineral mixture
Rt: Usage of ration chart

Figure 8: Percent deviation from E-R for food sub-parameters

	Food item	Kgs
Adult female	Fodder grass	15
	Green cadjan	10 no.
	Palm leaf	2 no.
	Plantain	2
	Sugarcane	5
	Fodder	40
	Bread	3
	Carrot	2
	Cooked rice	1
	Horsegram+Ragi+Greengram	1.5
	Adult male	Fodder grass
Green cadjan		10 no.
Palm leaf		2 no.
Plantain		3
Sugarcane		15
Fodder		60
Bread		4
Carrot		3
Cooked rice		1
Horsegram+Ragi+Greengram		1.5

Table 1: Food items and quantity fed to elephants in the zoo

Reproductive status

In captivity, opportunities for expression of reproductive behaviour are limited either due to absence of individuals of opposite sex/ restrictions imposed on movements/ due to deficiencies in reproductive biology of the elephants.

- The female was not reproductively active due to her age; reproductive functioning was possible but not allowed for the male.

M-R for successful pregnancy for the female was 0.0; M-R for reproductive activity of male was 0.0.

Health status:

In captivity, elephants are exposed to close contact with people/ domestic animals, making them prone to several diseases. Following established veterinary protocol will help ensure maintenance of health.

- As per document submitted, no major diseases were reported M-R was 3.4 (SE= 1.6, N*= 6) showing a deviation of 58% from E-R. Figures 9 and 10 represent comparative ratings and percent deviation, respectively, for health sub-parameters.

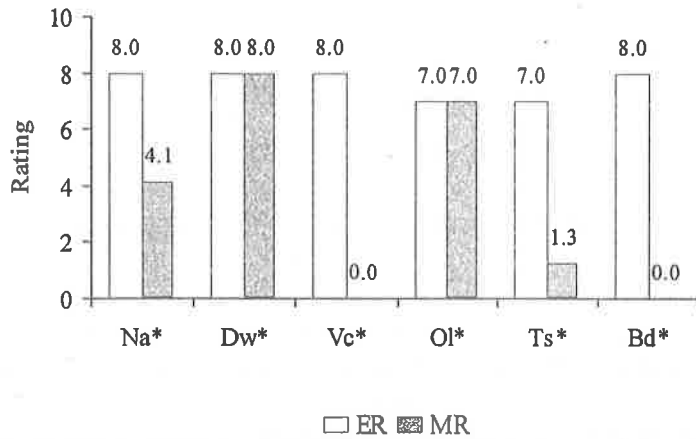


Figure 9: Comparison between E-R and M-R for food sub-parameters

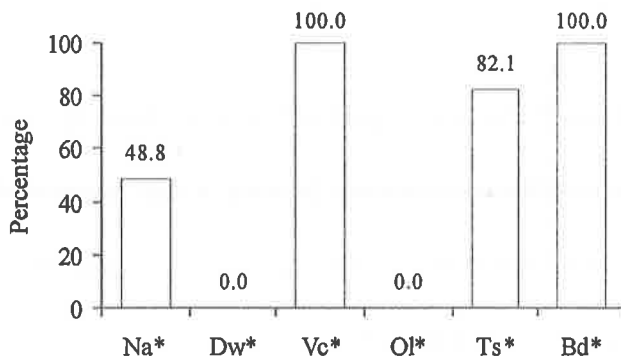


Figure 10: Percent deviation from E-R for health sub-parameters

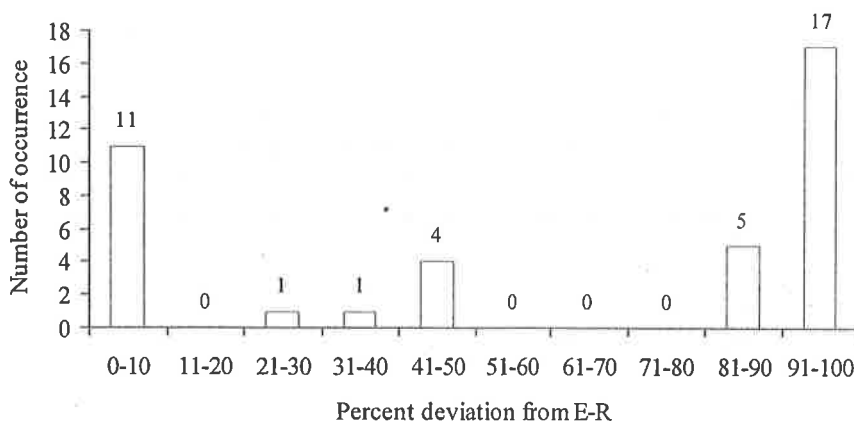


Figure 11: Distribution of percent deviation from E-R across all observed parameters

Overall Rating

The overall rating, considered across all observed parameters, gives an indication of the welfare status in terms of the deviation observed from prescribed norms for the captive elephants. Overall M-R was 3.2 (SE= 1.3, N*= 39) showing a deviation of 60% from E-R. Figure 11 gives the distribution of percent deviation from E-R for each of the observed parameters. 64% of the parameters show a deviation of 50% or more from E-R, i.e., more than half of the observed parameters (N*= 39) deviate by 50% or more from norms prescribed by experts.

Discussion

The living conditions for elephants in Thiruvananthapuram Zoo were characterized by absence of natural features:

- Shelter or enclosure had unsuitable hard concrete flooring, shade was provided by metal roofing
- The elephants were not allowed opportunity to free range, and animals are chained all the time.
- Exercise, in the form of walking, was negligible
- Despite the presence of two elephants of opposite sex, opportunity to socialize was not provided by the zoo authorities
- Psychological stimulation, by providing suitable species-specific features to enable the elephants to express natural behaviours, was also found absent

RECOMMENDATIONS:

It is strongly recommended that Thiruvananthapuram Zoo phases out its elephant facility without further delay.

The male elephant “Rajkumar” must be **transferred immediately**, to the Elephant Rehabilitation Center at Kappukad, Thiruvananthapuram Wildlife Division, Agasthyavanam Biological Park Circle, Kerala Forest Department. The surrounding reserve forest space, presence of a water reservoir and interaction with other elephants will help him to lead a balanced life in captivity at the above center, as close to natural conditions as possible,

which is currently absent in the zoo environment. The Elephant Rehabilitation Center at Kappukad was also evaluated by the committee members and found to be suitable.

The cow elephant "Maheshwari" may be allowed to live out the remainder of her life at the same zoo. At present she is gradually becoming senile and has no interaction with the male elephant. All efforts should be made to provide for better living conditions for this elephant for the remainder of its life: opportunity to range-free in her enclosure, a pool to bathe, opportunity to wallow/dust-bathe, distribution of forage in different points of the enclosure to simulate foraging conditions, no change of the elephant's handlers if the elephant is habituated to a particular mahout/cawadi.

CONCLUSION:

In keeping with the ban on elephants in zoos of India, Thiruvananthapuram Zoo should immediately shift the bull elephant Rajkumar to the Elephant Rehab center in Kappukad and not acquire any further elephants.

Eventually after the death of the cow elephant Maheshwari, Thiruvananthapuram Zoo may consider using their elephant enclosure for housing and display of any smaller species of mammals which presently have inadequate and unnatural housing due to lack of space and facilities such as hyenas, jackals etc which are in extremely constrained enclosures currently.

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ANNEXURE I

Observed parameters reflect the diverse aspects of an elephants' condition in captivity and their overall welfare status.

The total number of parameters that can be used for assessing the significance of welfare can be 21. Such parameters include a number of variables/sub-parameters which can vary depending on the situation. Here parameters refer to characteristics of a particular aspect of a captive situation that is made of several components /sub-parameters. For instance, 'water' is a parameter made of sub-parameters such as: Availability of perennial source of running water, distance to water source, quantity of water provided for drinking, etc.

Assessment of welfare through rating values – how to reach conclusion on management and welfare status:

The rating method:

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

- The experts, based on their concept of the importance of a particular parameter to an elephant, developed rating for each parameter. For example mean expert rating of 8.0 (SE= 0.5, N=29) for a parameter 'floor' and 9.0 (SE=0.4, N=31) was arrived for 'source of water' from the ratings suggested by each expert.
- A mean rating for each parameter, across all the participating experts, has been used as the Experts' Rating (E-R) which represents the importance attached to a parameter.
- Elephants were visited on the ground; data for each parameter was collected by direct observations or with the interviews of people associated the animal. Mean Rating (M-R) was calculated for a given parameter, along with its sub-parameter. Thus the

Mean Rating (M-R) denotes welfare status of existing conditions on the ground for the particular parameter.

- For example, if an elephant is exposed only to natural flooring, the animal receives a M-R of 8 and for entirely unnatural flooring the value is 0; if an animal is exposed to both natural and unnatural flooring, the value is 4 (as $8+0/2=8/2=4$). If an elephant is exposed to a natural water source, such as a river, it receives a value of 9; if the source of water is large lakes or reservoirs, it gets 4.5. A value of 3.5 is assigned for small water bodies like tanks and ponds. Tap water (running) gets 2.5 and if only buckets, pots, and tankers are in use, then the allocated value is 0.5.
- In this investigation, variables which represent a common feature of the captive condition have been grouped to form a parameter. For example, the variables shelter type, shelter size, floor type in the shelter; all represent different aspects of the physical space provided to the elephant. Hence, they are grouped together to form the parameter "Shelter" and each constituent variable is a sub-parameter. In this investigation, the E-R for a parameter (say, shelter) represents the mean of E-Rs across all related sub-parameters. M-R is also based on similar lines.
- E-R and M-R for each of the regimes represent the average across related parameters observed for the regime. For instance, E-R / M-R for a parameter "Shelter" represent the average of related parameters (termed sub-parameters) such as type, flooring, size, and shade availability.
- Results have been presented comparing E-R and M-R as a means of comparing the extent of deviation present in the parameters observed. The difference between E-R and M-R (expressed as percentage) indicates deviations from the prescribed norm.
- N represents number of individuals and N* refers to number of sub-parameters.
- Ratings presented here are a combination of ratings obtained from the All India Captive Elephant Survey (2005) and the 2010 visit by members of the Committee.

Annexure II

Ratings for observed parameters:

Source	
ER	6.0
MR	0.75
N	2

Shelter	
ER	8.0
MR	0.4
SE	0.3
N*	4

Chaining	
ER	8.0
MR	1.0
SE	1.2
N*	4

Behaviour	
ER	8.0
MR	7.7
SE	1.1
N*	3

Water	
ER	8.0
MR	3.1
SE	1.6
N*	4

Walk	
ER	8.0
MR	3.3
SE	3.5
N*	3

Social interaction	
ER	8.0
MR	0.0
N	2

Food	
ER	9.0
MR	3.4
SE	2.3
N*	4

Health	
ER	8.0
MR	3.4
SE	1.6
N*	6

Veterinary care	
ER	9.0
MR	7.5
SE	1.4
N*	4

Rajiv Gandhi Zoological Park & Wildlife Research Center, Katraj, Pune

Background:

The CZA Appraisal of Zoo Elephants team visited the above mentioned location on 20th June 2011. Dr. K. K. Sarma, Professor, Veterinary College Guwahati, Assam, Dr. Brij Kishor Gupta, Evaluation & Monitoring Officer, CZA and Ms. Suparna Baksi Ganguly, President & Trustee, CUPA (Compassion Unlimited Plus Action) & WRRC (Wildlife Rescue & Rehab Center), Bangalore, Karnataka comprised the visiting team. In a letter dated 17.03.2010, the Municipal Commissioner of Pune Municipal Corporation, had requested to retain the elephants on the grounds of comfort and amenities that Pune Zoo is capable of providing for the elephants and the educational attraction they have for all visitors. Hence it was necessary to evaluate the conditions of the said zoo for CZA to take a proper view.

Officers present –

1. Dr. E. Bharucha, Member, CZA
2. Dr. Rajkumar Jadhav – in-charge & Dy. Garden Superintendent (Zoo)
3. Dr. N.K. Nighot, Veterinary Officer
4. Ms. Ashwini Shitole, Educational Officer

There are 2 female elephants housed in the zoo which are currently 13 years of age. These were orphaned calves given by Nandan Kanan Zoo in Bhubaneswar, Orrisa in 2003, when they were 5 years old.

The 2 elephants are looked after by 1 mahout and two assistants who are also getting exposure and training to handling the same.

Enclosure size



The zoo encompasses an area of 165 acres. The Asian elephant enclosure spans an area of approximately 21,198.61sq. meters or 5 acres or 3 % of the total area. The area is cordoned off by a moat on one side and a lake on the other, which is not accessible to the elephants due to the presence of a concrete wall. The elephants are confined within this outdoor zone for 5-6 hours. From 5pm to 9 a.m. , approx. 16-18 hours, they are tethered under a shed with concrete flooring, which is located within this enclosure. One female, Merry, is more aggressive and is tied with chains on both fore and hind legs, when in the shed. For Janaki, only the hind leg is chained. Both the elephants are tied next to each other in the shed. There is ample shade provided by “subabul” trees, which can also be a source of fodder, in the outdoor enclosure.

Shed details



The shed is approx. 15 feet high and made of concrete. The floor is rough cemented and concrete mixture. Water takes longer to dry once floor wash is done, due to the rough surface. Arrangement for chaining is present. There is no arrangement for fans to dry the floor or keep the shed cool during summer.

Hygiene



Enclosure and shed was clean and hygienic. Dung was not observed. Municipality solid waste bin has been placed for collection of the same, which is periodically removed by the Corporation trucks.

Water source

The elephants are bathed by means of a water hose pipe, in the area within the enclosure, when observed. The concrete rough floor is used as a surface for the elephants to lie on. There is no provision for wallowing. Corporation supplied water is used for drinking and bathing the elephants. No water drinking trough was observed for elephants to access at will.

Exercise

There is no exercise given to the animals due to manpower and other constraints.



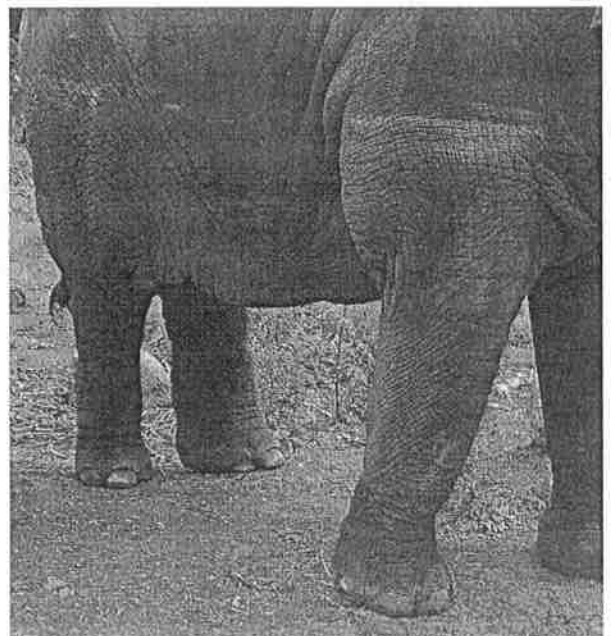
Being a city zoo, the animals cannot be taken out for walks since the zoo is located in high traffic density zone.

However, there is ample space within for this activity, but it is not being practiced.

Medical

1. There is a recorded history of fasciola (liver fluke) infection in one of the elephants which later recovered after treatment. No vaccination has been done till date. No routine biochemical or hematological tests are also being carried out.
2. Regular supplementation of minerals and hygienic measures in the enclosure are followed.

Routine veterinary care including deworming and fecal examination is done once in 6 months.



Health

Both the elephants were overweight for their ages, Merry weighing 4410 kgs and Janaki 3411 kgs . They are obese, reluctant to move and do not behave in the normal restless way of an elephant which is mainly swaying of the trunk, flapping of their ears, movement of feet or throwing of mud etc. They have developed keratinization (thickening) of the elbows of the forelimbs and knees of hind limbs because of obesity and injuries caused by hard substrate of the shed for long hours. They also have developed cracked nails, unhealthy foot pad and badly overgrown cuticles which can develop into serious foot problems. No vaccinations are being done.

Nutrition

The nutritional regimen followed in the zoo for the elephants is very defective. It is richer on concentrates and very poor on fibres. Concentrate rations are again high on its carbohydrate components. This nutrition is mainly responsible for developing obesity and laziness in the elephants.

Behavior

Both elephants were observed to be nervous when visited. According to the information table, Merry used to be occasionally aggressive. Both are bonded to each other, and much interaction was observed between them.

Response of officials

The veterinarians and officials were unaware that the elephants do not get exercise and are obese. They were interested to have a diet chart and recommendations for improving the facility.

Options of various locations for shifting Pune zoo elephants:

As per the advisory dated 07.11.09 there are 3 areas where the zoo elephants can be shifted to Viz.

Elephants Camps / Rehab Camps/facilities available with FD at NP/WLS/TR for dept. use

After examination of the Pune zoo elephants, the Committee opines that the said animals are not fit according to medical, social and behavioural parameters, governing elephants in natural or semi natural conditions.

The rigours of a natural, camp life will not be possible to follow without adequate conditioning. Forest camp life entails foraging for 16-18 hours daily, patrolling, carrying tourists to view wildlife, and the discipline of following mahout commands.

Zoo elephants are used to minimum commands, inability to manage natural conditions since are not even getting adequate exercise, natural foraging or bathing and social ineptitude of handling other elephants or humans.

Currently, in Maharashtra and in the western region, there are no long term or short term facility/care centers/ rehab centers/ rescue centers to house zoo elephants in natural conditions, in order to make them fit (or condition them gradually) to Forest Camp life.

Forest Camps have little facilities for the management of elephants that are allowed access to their management from non-natural settings. Camp conditions can be especially stressful for elephants from zoos, if they do not have the conditioning and care that may be possible in care centers, where elephants are catered for, according to their individual requirements.

In view to create less hardship for these elephants, the following is recommended:

Recommendations

The zoo should be allowed to keep the elephants provided that it fulfills the following conditions:

1. It is recommended that the elephants be given opportunity for walking before and after visiting hours. From 6-7 am and from 6-7 pm (at least 2 hours in a day), the two elephants need to be walked in the zoo premises, avoiding the tarred metallic roads. Species specific behaviour , exercise, walking, bathing or grazing is not possible due to limitations of their current environment. Their sedentary life style may be mainly due to the inability to forage, graze or indulge in any activity to relieve boredom and the monotony of their existence. Therefore, reversing the tethering hours, may be beneficial. Night tying is not recommended and if necessary, needs to be done around the tree in the enclosure.
2. Their diet needs to be changed (gradually) from being concentrate oriented to being more fibre/roughage oriented. The energy (sugar) contents should

- be drastically reduced. The elephants should be encouraged to go for natural foraging within the enclosure.
3. An artificial water pond/pool needs to be constructed for the opportunity of wallowing and scrubbing of the elephants by the handlers at the time of bathing. There should be facilities for draining and cleaning of the pool once in 3-4 days.
 4. Drinking water trough should be placed inside the enclosure so that the same is freely available to the animals.
 5. As far as possible, the elephants should not be tied in the shed; instead, they may be left loose or tethered with long chains to some trees inside the enclosure at night.
 6. The vets should regularly visit the elephants and carry out all clinical examinations, behavioral studies, foot care, and routine dung, urine and blood analysis. They should seek assistance of the Vet College for serological test for the commonly occurring infectious diseases.
 7. The elephants should be regularly vaccinated against commonly occurring infectious diseases like tetanus, HS, rabies, FMD etc.
 8. Veterinary training of the zoo vets on elephant healthcare and management is recommended.
 9. Another 2 mahouts should be appointed to be able to take care and implement the exercise schedule of the elephants. The mahout should be sent for orientation training and upgrading his skill and knowledge of elephant husbandry.
 10. Socially they have been deprived of learning and skills of feeding, socializing, playing and other species specific behavior by keeping them isolated from different age class, which is the normal family herd in a wild group. It is recommended that, if possible, a healthy and behaviorally sound adult female (which may be isolated in some zoo) should be brought in to form a near natural social group.

Details about the Asian elephants Rajiv Gandhi Zoo Elephants housed in Pune :

1. Merry

Age: 13 Years 6 months approx.

Sex: Female

Source: Rescued from the wild as orphans. Given by Nandan Kanan Zoo, Orrisa.

Care taker / Animal Keeper: Sri T. A. Mahat

2. Janaki

Age: Appr. 13 years 8 months

Sex: Female

Source: Rescued from the wild as orphans. Given by Nandan Kanan Zoo, Orrisa.

Care taker / Animal Keeper: Sri T. A. Mahat

Aurangabad Municipal Zoo, Aurangabad

Background:

The CZA Appraisal of Zoo Elephants team visited the above mentioned location on 22nd June 2011. Dr. K. K. Sarma, Professor, Veterinary College Guwahati, Assam, and Ms. Suparna Baksi Ganguly, President & Trustee, CUPA (Compassion Unlimited Plus Action) & WRRC (Wildlife Rescue & Rehab Center), Bangalore, Karnataka comprised the visiting team.

On 22.05.10, Shri Chandrakant Khaire MP, from Aurangabad had written to the erstwhile Forest Minister, Shri Jayram Ramesh, to allow elephants in the Zoo since there were in good condition, healthy and obedient. They were also the star attraction of the zoo. The visit was undertaken to ascertain the conditions and the possibility of moving them to an appropriate location.

Officers present –

- 1. Dr.B.S.Naikwade**
Zoo Director

Details of elephants

1. Saraswati
Age: Approximately 48 ; D.O.B. 05.08.1963
Sex: Female
Source: Received from, K-Gudi Forest Camp, Mysore Forest Division, Karnataka Forest Department on 09/8/1996
2. Laxmi
Age: 13 years . ; D.O.B: 09.11.97
Sex: Female
Source: Captive born in zoo

Name of the Animal Keepers:

1. Shri Ramdas Chavan
2. Shri Rajendra Lokhande

Observations:

Details of Asian Elephants housed in Aurangabad Zoo:

There are 2 females elephants housed in the zoo of 48 and 13 years respectively. The female delivered a female calf a year later. The 2 elephants are looked after by 2 mahouts and one assistant. The two elephants have been in the zoo for 15 and 13 years respectively.

Enclosure size

The zoo encompasses an area of little over 35 acres. The Asian elephant enclosure spans an area of 21 x 70 mtrs. The shed within this space measures 7 x 8 meters. There are two such sheds adjacent to each other. The area is cordoned off by a moat, so the animals are confined within this zone. They had no chains on their feet, when observed. Most of the animal lingered around one spot, close to each other.

The elephants are left free in the moated enclosure with space for an open water tank of 10,000 litres capacity. There is no facility for mud bath, dry space, water points, rubbing areas and shaded areas.

Water source

The elephants are bathed by means of a water hose pipe, in the area outside enclosure, when observed. Drinking water was acquired from the Municipal Corporation.

Diet

The elephants are given stalks of jowar, sugarcane, peepal leaves, para grass, dried hay, and cooked rations of about 8 kgs per day. Fibre content and nutrients are present in their diet. It could be further improved upon, The dung inspection of Saraswati revealed undigested matter in large proportion. This is mainly due to her 5th missing molar. She would need soft cooked food, keeping in view her advancing age, in future years. Presently 6 kgs. of cooked rations are being provided consisting of rice, chana, wheat and jaggery for each elephant.

Exercise

They get minimal exercise which can be vastly improved upon.

Medical

The elephants have no recorded history of contagious / infectious diseases. Routine veterinary care includes:

1. Fecal examination twice a year
2. Deworming twice a year

Swaraswati has lost her lower molar of one side and can not chew the fodder properly.

Response of officials

The officials are concerned that if the elephants are taken to a forest camp they may not be able to cope with forest conditions or walking long distances in search of fodder. They are ready to follow every condition laid down in order to retain the elephants.

Options of various locations for shifting Pune zoo elephants:

As per the advisory dated 07.11.09 there are 3 areas where the zoo elephants can be shifted to Viz.

Elephants Camps / Rehab Camps/facilities available with FD at NP/WLS/TR for dept. use

After examination of the Aurangabad Zoo elephants, the Committee opines that the female elephant, Saraswati, is not physically capable of coping with FC conditions.

The rigours of a natural, camp life will not be possible for her to follow since she has one molar missing and her dung reveals improper digestion. Foraging for 16-18 hours daily, patrolling, carrying tourists to view wildlife, encounters with tigers in Tiger Reserves and the discipline of following mahout commands, may be extremely stressful and may lead to acute health problems. Her 14 year old daughter is deeply attached to her and becomes agitated and anxious if she does not see the mother.

Elephant bonds of family and clan are complex and important for their health and stability and it would be wise not to disturb the same by any separation of the two elephants.

Currently, in Maharashtra and in the western region, there are no long term or short term facility/care centers/ rehab centers/ rescue centers to house zoo elephants in natural conditions, in order to make them fit (or condition them gradually) to Forest Camp life.

Forest Camps have little facilities for the management of elephants from non-natural settings. Camp conditions can be especially stressful for elephants from zoos, if they do not have the conditioning and care that may be possible in care centers, where elephants are catered for, according to their individual requirements and health conditions.

In view to create less hardship for these elephants, the following is recommended:

Recommendations

The zoo should be allowed to keep the elephants provided that it fulfills the following conditions:

1. It is recommended that the elephants be given opportunity for walking before and after visiting hours. From 6-7 am and from 6-7 pm (at least 2 hours in a day), the two elephants need to be walked in the zoo premises, avoiding the tarred metallic roads. Species specific behaviour , exercise, walking, bathing or grazing is not possible due to limitations of their current environment. Their sedentary life style may be mainly due to the inability to forage, graze or indulge in any activity to relieve boredom and the monotony of their existence. Therefore, reversing the tethering hours, may be beneficial. Night tying is not recommended.
2. There are adjoining areas which has to be urgently incorporated into their current enclosure, and the elephants need to be allowed free access. Chaining in the shed should be done for short duration in order to have them conditioned for veterinary procedures, if need arises.
3. An artificial water pond/pool needs to be constructed for the opportunity of wallowing and scrubbing of the elephants by the handlers at the time of

bathing. There should be facilities for draining and cleaning of the pool once in 3-4 days.

4. Drinking water trough should be placed inside the enclosure so that the same is freely available to the animals.
5. Older elephant Saraswati, should be given soft succulent fodder like lucerne, maize, etc. which can be chopped to small pieces and fed.
6. The vets should regularly visit the elephants and carry out all clinical examinations, behavioral studies, foot care, and routine dung, urine and blood analysis. They should seek assistance of the Vet College for serological test for the commonly occurring infectious diseases.
7. The elephants should be regularly vaccinated against commonly occurring infectious diseases like tetanus, HS, rabies, FMD etc.
8. Veterinary training of the zoo vets on elephant healthcare and management is recommended.
9. Mahouts should be appointed to be able to take care and implement the exercise schedule of the elephants. The mahout should be sent for orientation training and upgrading his skill and knowledge of elephant husbandry.
10. Though, socially deprived of species specific behavior by keeping them isolated from different age class, which is the normal family herd in a wild group, it is recommended not to separate the two related animals, and if necessary, both should be placed together if there is future change of facility.

Veermata Jijabai Bhosale Udyan Zoo, Byculla, Mumbai

Background:

The CZA Appraisal of Zoo Elephants team visited the above mentioned location on 23rd June 2011. Dr. K. K. Sarma, Professor, Veterinary College Guwahati, Assam, and Ms. Suparna Baksi Ganguly, President & Trustee, CUPA (Compassion Unlimited Plus Action) & WRRC (Wildlife Rescue & Rehab Center), Bangalore, Karnataka comprised the visiting team.

Officers present –

1. Dr. Sanjay A. Tripathi, Dy. Superintendent & Senior Vet
2. Dr. Komal V. Powar, Vety. Officer
3. Shri A.L. Paranjpe, Education cum PRO

There are 2 female elephants housed in the zoo which are currently 46 and 54 years old, respectively. These were acquired from the Jumbo Circus in 11.11.1980. They have been residing in the zoo since 31 years.

The 2 elephants are looked after by 2 mahouts, Shri Mobin Khan and Shri Sajid Khan, who have been with them for many years.

Enclosure size

The zoo encompasses an area of 53 acres. The Asian elephant enclosure spans an area of approximately 4339.80 mts. The area is cordoned off by a moat on all sides and a high protective wall. There is a water body of 330.31 sqmt. within the enclosure. The elephants are confined within this zone for 5-6 hours. From 5pm to 9 a.m., approx. 16-18 hours, they are tethered under a shed with concrete flooring, which is located within this enclosure. There is ample para grass growing luxuriantly in the enclosed area, which can also be a source of fodder for the elephants.

Shed details

The shed is approx. 25 feet high and made of concrete. The floor is rough cemented and concrete mixture. Water takes longer to dry once floor wash is done, due to the rough surface and high humidity of the area. Arrangement for chaining is present. There is no arrangement for fans to dry the floor or keep the shed cool during summer.

Hygiene

Enclosure and shed was clean and hygienic. Dung was not observed.

Water source

The elephants are bathed by means of a water hose pipe, in the area within the enclosure, when observed. The concrete rough floor is used as a surface for the elephants to lie on. There is good provision for wallowing and used by the elephants at their will particularly during the summer season. Corporation supplied water is used for drinking and bathing the elephants. Water drinking trough was observed for elephants to access at will, inside the shed which was clean.

Exercise

There is no exercise given to the animals. It was stated that they were walked for half an hour daily inside the premises.

Medical

1. There is a recorded history of foot problems and a tumor operation done successfully. No vaccination has been done till date. Routine biochemical or hematological tests are also being carried out in private labs.
2. Regular supplementation of minerals and hygienic measures in the enclosure are followed.

Routine veterinary care including de-worming and fecal examination is done once in 3 months.

Health

Laxmi (54 years) weighs 2,500 kgs and Anarkali (46 years) weighs approx. 3,500 kgs. They are active and alert. They also have developed cracked nails, unhealthy foot pad and overgrown cuticles which has developed into serious foot problems for Laxmi. Anarkali has lost her upper and lower molars on the right side and chews with one side only.

Nutrition

The nutritional regimen followed in the zoo for the elephants is high on fibres and protein. Para grass, lucern grass, paddy straw hay and sugarcane are the fibers given to the elephants. They are getting other concentrates adequately.

Behavior

Both elephants were observed to be nervous but obedient when visited. According to the information table, Laxmi had injured a drunken visitor who had jumped into the enclosure. After the incident, she had displayed stress and remorse, according to the mahout. Both are bonded to each other, and much interaction was observed between them.

Response of officials

The veterinarians and officials were unaware of the cause for the foot conditions which can be minimized by right management. They were interested to have recommendations for improving the facility.

Recommendations

The zoo should be allowed to keep the elephants provided that it fulfills the following conditions:

1. It is recommended that the elephants be given opportunity for walking before and after visiting hours. From 6-7 am and from 6-7 pm (at least 2 hours in a day), the two elephants need to be walked in the zoo premises, avoiding the tarred metallic roads. Reducing the tethering hours, may be beneficial. Night tying is not recommended and if necessary, needs to be done around the tree in the enclosure.
2. Their diet needs to be changed (gradually) from being natural to inclusion of cooked rations, in view of their age, especially Laxmi. The elephants should be encouraged to go for natural foraging within the enclosure.
3. The elephants need to be bathed and scrubbed inside the artificial water pond/pool instead of by hose pipe. There should be facilities for draining and cleaning of the pool once in 3-4 days.
4. As far as possible, the elephants should not be tied in the shed; instead, they may be left loose or tethered with long chains to some trees inside the enclosure at night.
5. The vets should regularly visit the elephants and carry out all foot care procedures with the mahouts.
6. The elephants should be regularly vaccinated against commonly occurring infectious diseases like tetanus, HS, rabies, FMD etc.
7. Veterinary training of the zoo vets on elephant healthcare and management is recommended.
8. The mahout should be sent for orientation training and upgrading their skill and knowledge of elephant husbandry.

Assam State Zoo and Botanical Garden, Guwahati, Assam

Background:

The CZA Appraisal team for Zoo Elephants visited the above mentioned location on 15th and 16th March, 2012. Dr. K. K. Sarma, Professor & Head, Dept. of Surgery & Radiology, Veterinary College, Guwahati, Assam, and Ms. Suparna Baksi Ganguly, President & Trustee, CUPA (Compassion Unlimited Plus Action) & WRRC (Wildlife Rescue & Rehab Center), Bangalore, Karnataka comprised the visiting team.

Officers present:

1. Sri Utpal Bora, IFS, D.F.O.
2. Sri Pradipta Baruah, AFS, A.C.F.
3. Dr. M.L.Smith, F.V.O.
4. Sri Paresh Das, R.O.

Elephant and Mahout Details:

There are 5 elephants - ranging in ages from 3.9 years to 23 years currently housed in the zoo, of which one is a juvenile male. These were acquired from various forest divisions as rescued calves when they were one year old or less. They have been residing in the zoo since, with Elephant Madhabi being the oldest at 23 years and undertaking the role of foster mother and caretaker of the younger ones.

The 5 elephants are looked after by a team of 8 mahouts, whose details are below. Their experience in this field range from their childhoods, to about 25 -30 years. In the case of the senior Mahout, it is even more.

<u>Name</u>	<u>Designation</u>	<u>Age</u>	<u>Qualification</u>	<u>Salary</u>
1. Sri Niranjan Boro, Mahut (Permanent)		57 Yrs.	Class IX	Rs. 23,000/-
2. Sri Durga Santam	-Do-	48 Yrs.	Class VII	Rs. 17,000/-
3. Sri Bishnu Rava	-Do-	35 Yrs.	Class IX	Rs. 13,500/-
4. Sri Hareswar Barman, Grass Cutter (P)		50 Yrs.	Class VI	Rs. 15,000/-
5. Sri Bipin Deka,	-Do-	45 Yrs.	Class VI	Rs. 14,000/-
6. Sri Atul Barman, Mahut (Temp. Worker)		55 Yrs.	Class IV	Rs. 4,500/-
7. Sri Promod Deka,	-Do-	45 Yrs.	Class IV	Rs. 4,500/-
8. Sri Ramiz Ali,	-Do-	43 Yrs.	Class VII	Rs. 4,500/-

Enclosure size

The zoo and botanical garden encompasses an area of 175 ha. of mostly hilly and undulating terrain. Of these, the zoo animal enclosures take up 50 ha. The Reserve forest area covers 95 ha. and the botanical gardens another 30 ha.

The Asian elephants' current enclosure spans an area of approximately 2 hectares of flat land. The area is cordoned off by a pond on one side, mahout and staff quarters on the other, and the zoo boundary wall at the opposite end. There is a water body of approx. 4 hectares adjoining the enclosure. The elephants are confined within the enclosure zone for 16 hours – from 4pm to 8 am. Tethering is under the shade of the trees with natural earth flooring. From 8 am to 4 pm - approx. 8 hours, they are left in the reserve forest zone for grazing purpose, given a bath and also taken for walks within the zoo premises. There is mainly bamboo, ficus, figs, grasses eg. "ikra" or elephant grass, *phragmites*, *Alpinia nigra* or "Tara", *Hygroryza* or "dol", *Imperata cylindrica* or "ulu-kher" - some of the specific grasses growing in the reserve forest zone which is behind this enclosed area, and is a source of forage and exercise for Madhabi and the calves.

Hygiene

Enclosure, when visited was clean. Dung was not observed. However, the adjoining pond was not hygienic and the water has been contaminated by human activities like bathing etc.

Water source

The elephants are bathed in the aforementioned pond, which has direct access from their enclosure. There is good opportunity for dust bathing which was observed and maybe wallowing, if they were permitted to do so. However, water could not be accessed by the elephants at their will and this was a disadvantage, particularly during the summer season. The pond water is used for bathing the elephants. Drinking water is supplied in buckets, source being the municipality supply water.

Exercise

There is 2 kms of walking after bath, as specific exercise given to the animals. Regular daily grazing inside Zoo Forest and walking within Zoo premises while bathing is done between 11 A.M. to 3 P.M.

Medical

1. Tetanus toxoid, FMD, Anthrax and Rabies vaccinations are done regularly.
2. Regular supplementation of minerals and hygienic measures in the enclosure are followed.
3. Screening for intestinal parasites and routine veterinary care including deworming and fecal examination is done once in 3 months.
4. The zoo has a well equipped veterinary hospital and two veterinarians to look after the animals. The zoo is just 5km away from the College of Veterinary Science, Guwahati and can get expert support as and when required.

Health

Madhabi (23 years) weighs 22 qtl. approx. with a height of 2.53 m.

Protima (4.5 years) weighs 6 qtl. approx. with a height of 1.63m.

Sibanan (3.9 years) weighs 5 qtl. approx. with a height of 1.67m.

Julie (8.6 years) weighs 10qtl.approx. with a height of 1.83m.

Deepa (11.7 years) weighs 5qtl.approx.with a height of 1.22m.

They first 3 are active and alert.

Deepa is severely handicapped as the result of a fall at the age of 1.5 years, from the previous elephant enclosure, which is situated on a hill. Her hind limbs were fractured and subsequent treatment on a hoist damaged her radial nerves, as a result of which she has been crippled for life. The sight of her is pathetic and undue pressure on the elbows indicates that she might be in severe chronic pain.

Julie was wounded by a tiger attacking her and her mother, a captive elephant in the Orang National Park. Her forelimb was badly damaged and she was hospitalized the Veterinary College, Guwahati. After her wounds healed, she was brought to the zoo for continued veterinary care. She needs to be treated with special care and has to be under the guidance of a caretaker cum mahout, who can oversee her activities and physiotherapy. She would be an ideal care center candidate, if there was one, permanently.

Nutrition

The nutritional regimen followed in the zoo for the elephants is high on natural fibres and foliage. The diet chart is given below:

Species: Elephant (Adult)

Sl. No.	Item Name	Weight in Kg/gm	Remarks
1	Carrot	1.000 kg	
2	Athia Banana	10 nos.	
3	Gram whole	1.000 kg	
4	Black Salt	0.050 kg	
5	Common salt	0.040 kg	

6	Mug Kalai	2.000 kg	
7	Molasses	0.500 kg	
8	Sugar cane	4.000 kg	
9	Bread sliced	0.350 kg	
10	Paddy	2.000 kg	
11	Green grass (Dal, Para etc.)	150 kg	
12	Pea nut	0.200 kg	Seasonal
13	Mustard Oil	1.000 ltr./month	For external use
14	Local tree leaves	50.000 kg	

Behavior

Madhabi, along with the 2 calves, was observed to be calm and obedient when visited. This unique elephant is characterized by her wonderful allo-mothering and foster parenting skills, which has enabled the survival of many freshly rescued calves at this center. In wild elephants herds, the presence of the aunties or foster mothers is the most significant aspect of the matriarchal family system giving the wild elephants the edge over other species in their life long bonding, attachments and kinship with each other. For such a long living land mammal, the presence of foster or allo-mothers are the foundation and learning experiences for their future survival skills.

According to information and observation, Sibanan seemed much attached to her and was always in close physical proximity. Protima, the female calf, seemed restless and bored. Being tied at a distance from these two elephants, she seemed isolated and developing some abnormal habits like stretching her hind limbs in a peculiar position as if sitting on her haunches. Boredom and inability to express natural behavior, seemingly distanced from the other two due to chaining, may be the cause of this aberrant and unusual behavior (Stereotypic behavior).

Julie and Deepa were tied in the original enclosure on the hill. They seemed to be no access or bonding with each other, when observed. If they were in distress, it did not reveal itself at the time of visit. The enclosure seemed an inappropriate site for these two elephants which have very special needs.

Response of officials

The officials are in compliance with the 2009 ban on the keeping of elephants in zoo for display, joyrides or visitor entertainment. They have transferred 7 elephants to the Parks and reserves since then.

However, being the only facility in lower Assam for the upkeep of rescued calves from forest areas, they have requested for permission to function as a **transit care center** for such calves, till they can be sent to the Government facility for undertaking forest patrolling, anti-poaching duties and related camp works. However, they have displayed their disapproval of using these calves later for tourism which is not in keeping with the natural activities of the elephants.

Having rescued 40 elephant calves over a span of 20 years, from 1989 to 2012, with a fatality rate of 35%, some calves arriving as young as one or two months only, the staff and the zoo has developed expertise in the upkeep and survival of such animals. 65 % of the animals have been relocated to National Parks and Forest zones with 8 elephants being gifted to zoos - 4 elephants to the Mumbai Zoo in 1999, 2 to the Chatbir Zoo in 1995, one to the Delhi Zoo in 2000 and one to a zoo in Japan in 2000. However, with the ban on zoo elephants, they are in agreement that the rescued elephants, once in the sub-adult age, would have a better life in the natural environment of the Parks than in a zoo environment.

They were interested to have recommendations for improving this facility.

Recommendations

Since the Assam Zoo has the requisite manpower, budget and veterinary support, the zoo should be allowed to retain the transit center for rescued elephant calves provided that it fulfills the following conditions:

1. It is recommended that the elephants be given opportunity for walking freely in the enclosure, without chains, for at least 18-20 hours a day. Drastically reducing the tethering hours, may be beneficial. Night tying is not recommended and if necessary, walls and barriers should make their space secure and prevent them from walking out. **Ideally, requisite barriers should be the mode of confinement rather than chains.**
2. The elephants should be encouraged to go for natural foraging in the Reserve Forest area. The practice of putting them in confinement for 16 hours and in activity for less than 8 hours needs to be reversed. **It is recommended that they should be confined for 4-6 hours, if necessary, and allowed to walk freely and indulge in species specific behavior for 16 hours.**
3. The water body used currently for bathing the elephants should be sanitized and insulated from other domestic animal and human usage. On observation, it did not look very hygienic. Water testing is recommended immediately to determine the level of contaminants.
4. As far as possible, the elephants should not be tied. They need to be left loose on level ground, since most of them are calves and can suffer from fatal falls or be critically injured in the hilly sections of the zoo gardens. Light tethering with long chains to some trees or anchoring pillars inside the enclosure can be practiced for limited hours.
5. The mahout should be sent for orientation training and exchange of skills and knowledge of existing elephant husbandry from other camps and states like Tamil Nadu and Karnataka for exposure and education.
6. Deepa should be examined critically by the CZA/Directorate of Project Elephant prescribed Committee as soon as possible, for a final solution to her chronic pain and compromised quality of life.

7. Julie should be managed with much care and nurturing, till she is able to reach an acceptable standard of physical fitness and normal functioning. She needs to be managed and kept in close proximity of the other elephants, especially Madhabi.

During the period of inspection, both Julie and Deepa were housed and kept tied separately within the hilly sections of the old elephant enclosure, which is very inappropriate for elephant keeping and should be forthwith discontinued. The animals did not have interaction or access to each other which could easily be managed, till Deepa is there. It would add immeasurably to their quality of life.

The designated care and rescue center space for the elephants was examined. It is bounded by staff houses on one side and an open pond on the other. Moreover, the elephants also do not have a free access to the water body. However, this is the only flat area available within the zoo premises. So the area may be developed by relocating the staff quarters, providing boundary wall and protecting the pond from human access. This will encourage free movement and a better quality of natural life for the young elephants.

It is strongly recommended that these suggestions be followed to provide a model for such care centers for elephant calves, which are not released into the wild but will follow a captive life in protecting wildlife in National Parks and Tiger Reserves through their anti-poaching and patrolling duties.

Sd/-

(K. K. Sarma)

Sd/-

(Suparna Baksi Ganguly)

Kamla Nehru Prani Sangrahalaya, Indore, Madhya Pradesh

Background:

The CZA Appraisal team for Zoo Elephants visited the above mentioned location on the 22nd April, 2012. Dr. K. K. Sarma, Professor & Head, Dept. of Surgery & Radiology, College of Veterinary Science, Guwahati, Assam, and Ms. Suparna Baksi Ganguly, President & Trustee, CUPA (Compassion Unlimited Plus Action) & WRRRC (Wildlife Rescue & Rehab Center), Bangalore, Karnataka comprised the visiting team.

Officers present:

1. Dr. Uttam Yadav, Director
2. Dr. Akhilesh Upadhyay, Veterinary Surgeon
3. Sri Naresh Jaiswal, Civil Engineer

Elephant and Mahout Details:

There are 2 elephants - Moti (male) and Champa (female) with approximate ages of 43 and 48 years currently housed in the zoo. Moti had been purchased from a wandering "sadhu" in 27.04.79 at the age of 10 years. Champa was purchased from the cattle fair in Sitamarhi, Bihar, in 1984 at the approximate age of 20 years. They have been residing in the zoo since the last 28-33 years.

The 2 elephants are looked after by two mahouts, whose details are below. Their experience in this field is from their background of mahoutry as an ancestral profession.

<u>Name</u>	<u>Designation</u>	<u>Age</u>	<u>Qualification</u>	<u>Salary</u>
1. Sri Niyaz Mohammed	Sn. Mahout	53	Matric Passed	12,000/-
2. Sri Istiyak Khan	Jn. Mahout	45	6th pass	8000/-

Permanent employees with PF, ESI, GI & Pension benefits.

Annual medical test is conducted and has been Negative, so far, for TB.

Enclosure size

The zoo encompasses an area of 52 acres. The current elephant enclosure is about 1500 sq. mts. or about quarter of an acre.

The Asian elephants' current enclosure spans an area of approximately $\frac{1}{4}$ acre flat land. The area is cordoned off by a double layered fence in the front and a wall at the back. The female elephant is confined within the enclosure zone for 22 hours a day. The elephant shed for Champa is about 30 ft. x 15ft., and about 30ft. x 25ft for Moti. The roof is of metal sheet. However, since the front and back are open, it was not as hot as expected. The floor is sloped and made of stone slabs. Champa is reportedly taken for a daily walk for two hours. The substrate on which she is walked is metallic, partially tiled and is within the zoo premises.

Moti has been tied for the last two years in the same spot due to near continuous musth and having had an episode of aggression wherein he attacked his mahout. His condition of keeping is unacceptable by any welfare standards. Champa, too, has an extremely limited and restricted life.

Hygiene

Enclosure when visited was clean. Dung was observed and subsequently cleaned. However, urination seemed to be taking time to drain and since the elephants were restricted for long hours within this space, their feet were damp.

Water source

The elephants are bathed by a hose pipe which supplies potable water from the Municipality. There is no opportunity for dust bathing, wallowing, or any movement since both the front legs are hobbled as well as one rear leg is used for tethering. The chain on the leg is however, covered with a fire hose. Water could not be accessed by the elephants at will and this is a great disadvantage, particularly during the summer season. Drinking water is supplied in buckets or hose pipe, source being the municipality supply water and is dependent on the mahout's presence for giving it to her three times a day. However, there was a

water tank full of clean water on the back side of the adjacent paddock and Champa reportedly had access to the tank when she was brought out of her shed.

Exercise

Champa is reportedly walked 2 kms a day.

Medical

1. Tetanus toxoid vaccinations have been done regularly.
2. Regular supplements of minerals are administered.
3. Screening for intestinal parasites and routine veterinary care including deworming and fecal examination is done.
4. The zoo has a well equipped veterinary hospital and two veterinarians to look after the animals.
5. Foot conditions of Moti could not be examined, but Champa had some minor foot problems and requires pedicure treatment and regular footcare.

Health

Champa (48 years) weighs 4,500 kgs. with a height of 500cms. She is obese and her regime of exercise is inadequate. Constant pressure of her dead weight standing in one place on the stone floor, has put undue and negative effect on her foot and nails have been bent, overgrown and foot care, treatment and trimming needs to be initiated with immediate effect

Moti (43 years) weighs about 4000kgs. approx. with a height of 550 cms. He is tranquilized bi-monthly with mild doses of sedatives in order to facilitate the changing of his leg chains.

Champa is calm but listless. Moti is extremely aggressive, irritated and displaying aggressive behavior by hurling sticks, sugarcane pieces and grass at everyone he can target.

Nutrition

The nutritional regimen followed in the zoo for the elephants is high on carbohydrate. The diet chart is given below, per animal:

Species: Elephant (Adult)

Sl. No.	Item Name	Weight in Kg/gm	Remarks
1	Dry Grass	50 kgs.	
2	Green Grass (Berseem, lucern, sorghum, oat etc.)	100 kgs.	
3	Sugarcane	20 kgs.	
4	Rotis	5 kgs.	
5	Jaggery	5kgs.	
6	Gram	2kgs.	
7	Mineral Mixture		

Behavior

The elephants are kept in an environment of utmost inadequacy. Female Champa is chained for 22 hours. Though reportedly calm, she has no opportunity to display species specific behavior. She obeyed mahout commands. Mahouts always had the ankush with them, when approaching her.

Male Moti has been chained for 24 hours for the past 24 months, at the very least. He is oppressed and being constantly in musth is doubly tortured with the limitations of the environment which is of heat, lack of space, lack of water within his reach, constant glare of the visitors and lack of exercise. These conditions make him aggressive and violent which he manifests by constantly swinging his trunk, shifting his weight from one foot to the other, touching the temporal gland and throwing anything within his reach at any human presence.

Response of officials

The officials are in agreement that some solution has to be found to the above impossible situation. Their interaction with the team from the Pench National Park on 8.3.10 and with officials from the Kanan Pendari Zoological Garden, Bilaspur on 25.3.10 convinced them that their two elephants would not be accepted by these institutions. The same was conveyed to the PCCF, MP at Bhopal. Their solution has been to locate another 1.5 acres of land within the zoo which is shady, wooded with indigenous trees, and has earthen floor. This would present a positive change for the two elephants.

However, with the ban on zoo elephants and no alternatives in sight for housing them elsewhere, they propose the possibility of creating a better life for the elephants till their lifespan.

They were interested to have recommendations for improving this facility. The Civil Engineer mentioned that Rs. 50.00 lakhs had been released by the Indore Municipality for the immediate upgrading of the elephants' enclosure and work on this would start immediately, once approvals are obtained from the CZA.

Recommendations

The Indore Zoo has the requisite manpower, budget and veterinary support. For lack of an alternative and appropriate facility in the country, the zoo should be allowed to retain the elephants provided that it fulfills the following conditions:

1. It is recommended that the Moti needs medical intervention, in order to subdue the musth condition. For attempting to bring him back to normal, new medical procedures may be needed. Permission for this should be extended by the CZA, MoEF on a specific case basis. Once and if that condition is achieved, then Moti can be gradually improved provided that his living space and environment has drastic remedial measures taken.
2. Moti needs to be given opportunity for walking freely in the enclosure, without chains, for at least 18-20 hours a day. Drastically reducing the tethering hours will be beneficial. Night tying is not recommended and if necessary, walls and barriers should make their space secure and prevent them from walking out. **Ideally, requisite barriers should be the mode of confinement rather than chains.**
3. **If Moti cannot be brought under control, he should be transferred to a Forest Camp in Karnataka or Tamil Nadu where the presence of other**

dominant elephants, experienced mahouts and a natural lifestyle may ensure a better life for him.

4. **As an alternative, he can be moved to a protected contact system by constructing a musth enclosure with squeeze facility placed off-site and closed to the public.**
5. **He should be placed off-exhibit with immediate effect.**
6. Champa needs the presence of one or more female elephant companions. Her isolation will cause both physical and psychological damage in the years ahead. In the wild, elephants live in a socially complex, cohesive and mutually dependent matriarchal society. Adult males are peripheral to this structure, coming together only for mating or occasional interaction with their natal herd. To keep Champa isolated is a negative deviation from the mutually dependent, closely bonded and beneficial herd structure of wild elephants. The elephant Appraisal Committee should identify female zoo elephants that may be moved here or Champa moved out where appropriate spaces and companions exist.
7. The elephants do not have natural foraging or opportunity to be in natural surroundings. The practice of putting them in confinement for 22-24 hours and in no activity needs to be reversed. **It is recommended that they should be confined for 4-6 hours, if necessary, and allowed to walk freely and indulge in species specific behavior for 16 hours.**
8. The lack of the presence of water which the animals can access at will need to be reversed in the proposed enclosure. Water should be freely and easily accessed by them, and not dependent on the mahouts' presence to be made available to them.
9. The construction of the proposed enclosure should be initiated immediately. The elephants have already suffered enough. There should be no further delay. As far as possible, the elephants should not be tied. They need to be left without chains in the proposed new enclosure, where there is a recessed area for Moti's confinement when in musth.
10. The mahout should be sent for orientation training and exchange of skills and knowledge of existing elephant husbandry from other camps and states like Assam, Tamil Nadu and Karnataka for exposure and education.
11. For Champa, the concentrate ration should be cut by 25%.

Sd/-

(Dr.K. K. Sarma)

Sd/-

(Suparna Baksi Ganguly)

Kamla Nehru Zoological Gardens, Kankaria, Ahmedabad, Gujarat

Background:

The CZA Appraisal team for Zoo Elephants visited the above mentioned location on the 22nd April, 2012. Dr. K. K. Sarma, Professor & Head, Dept. of Surgery & Radiology, Veterinary College, Guwahati, Assam, and Ms. Suparna Baksi Ganguly, President & Trustee, CUPA (Compassion Unlimited Plus Action) & WRRRC (Wildlife Rescue & Rehab Center), Bangalore, Karnataka comprised the visiting team.

Officers present:

1. Dr. R.K. Sahu, Zoo Superintendent
2. Dr. N.K. Savdhariya, Deputy Zoo Superintendent

Elephant and Mahout Details:

There is only one female elephant – Roopa - with an approximate age of 24 years currently housed in the zoo. She had been captive born of elephant Bhanumathi from the Bandipur Forest Camp in Karnataka, in 1988.

Male tusker, Ashok, born in 1987 of captive elephant Radhika, was also purchased from the above mentioned source. He died at the age of 23, on 14.03.11 at the zoo, of reportedly enteritis infection. PM report was not produced. The two elephants had been together since the last 20 years. Since Ashok's death, Roopa has been alone with no interaction with any other elephants.

Elephant Roopa is looked after by three mahouts, whose details are below. Their experience in this field is from their background of mahoutry. They are natives of Uttar Pradesh.

<u>Name</u>	<u>Designation</u>	<u>Age</u>	<u>Qualification</u>	<u>Salary</u>
1. Sri Shyamlal Dayaram Gupta (experience 30 years) Senior Mahout		42 years	Std.8th	Grade 4440-7440
2. Sri Govindprasad G. Shah (experience 12 years)		23 years	Std.9 th	-do-
3. Sri ZahiraAhemad Y. Abbasi (experience 15 years)		42 years	Std.8 th	-do-

All are permanent employees with PF

Annual medical test is conducted and found Negative for TB.

Enclosure size

The zoo encompasses an area of 117 acres. The current enclosure is about 4840 sq. mts. However, the elephant was housed at the night shelter during the time of inspection and for the previous few days. There was renovation in process in the current shelter which was previously the hippo enclosure.

Roopa's current night shelter, where she was examined by the team, spans an area of approximately 30 ft x 25 ft. It is a fully constructed room with two doors and long windows. The area is cordoned off by a gate in the front. The elephant is confined within the enclosure zone for 22 hours a day. The roof is made of cement and is closed by a wall at the back. The floor is sloped and made of stone slabs. Champa is reportedly taken for a daily walk for two hours. The substrate on which she is walked is metallic, and is within the zoo premises. She is reportedly walked for 8-10 kms per day.

Hygiene

Enclosure, when visited was clean. Dung was observed and was cleaned. However, urination seemed to be taking time to drain and since the elephants were restricted for long hours within this space, her feet were damp.

Water source

The elephant was reportedly bathed in the cement pond in the current shelter, which was shown from a distance. The water is supplied by the Municipality. In her current night shelter, there is no opportunity for dust bathing, wallowing, or any movement since one of the back leg was chained and the front leg tethered. Water could not be accessed by the elephant at will.

Exercise

Roopa is reportedly walked 8-10 kms a day for two hours, every morning. The timings are from 6 AM to 8 AM.

Medical

1. Tetanus toxoid vaccinations have been done regularly.
2. Screening for intestinal parasites and routine veterinary care including deworming and fecal examination is done.
3. There are two veterinarians to look after the animals.
4. Foot conditions are moderate with overgrown cuticle and cracked toenails.
5. The zoo officials expressed that Roopa is pregnant as she was mated some 13-14 months back by the bull when he was still alive. However, they have not performed any test to confirm her pregnancy, till date.

Health

Roopa (24 years) weighs 4,000 kgs., with a height of 8. feet. Constant pressure of her dead weight standing in one place on the stone floor, has put undue and negative effect on her foot and nails have been bent, overgrown and foot treatment and trimming needs to be initiated with immediate effect.

Roopa displays all signs of boredom, inactivity and loneliness. Her persistent and marked stereotypic behavior of consistent swaying and rocking is a strong indication that her environment is unsuitable and inadequate.

Nutrition

The nutritional regimen followed in the zoo for elephant Roopa is high on carbohydrate and cooked supplements. The diet chart is given below, as per day:

Species: Elephant (Adult)

Sl. No.	Item Name	Weight in Kg/gm	Remarks
1.	Jowar Green Grass	150 kgs.	
2.	Sugarcane	20 kgs.	
3.	Balls of ragi, kulthi, rice	10 kgs.	
4.	Dry Jowar grass	Ad lib	
6	Pipal & banyan tree leaves	Ad lib	
7.	Banana, coconut, other fruits & jaggery		

Interaction and Environmental Enrichment

In the zoo every attempts should be made to emulate the natural conditions for the animals. However, it is understood that the exact conditions can never be recreated with the limited space and resources; therefore we attempt to eliminate all kinds of stress by giving them physical and psychological comfort within the limited zoo environment. The best form of enrichment for an elephant is the company of the con specifics that is member of the same species for company. After the death of her mate, Roopa has become lonely and in course of time, this loneliness will affect her physical and psychological wellbeing. Therefore, it is suggested that another lonely female (where available) may be searched from any other Indian zoo for Roopa's company or even it may be other way round also, depending on the resources and space availability of the receiving zoo.

Behavior

The elephant is currently kept in a highly inappropriate and inadequate environment. Roopa is chained for 22 hours. Though reportedly calm, she has no opportunity to display species specific behavior. She obeyed mahout commands. Mahouts had a wooden stick with them, when approaching her.

Response of officials

The officials are very keen to begin work on the new elephant enclosure which is located in the adjacent area. The Municipality has budgeted Rs. 8 crores for Zoo improvement works. The approval of the same is awaited. However, with the ban on zoo elephants and no alternative in sight for housing them, they propose the possibility of creating a better life for the elephant till her lifespan.

The new area was shown to the visiting team. Much work is proposed on the land. The team was accompanied by the consultant architect who was interested to have recommendations for improving this facility. If approved by the CZA, work on this would start immediately for which Rs. 1 crore has been earmarked.

Recommendations

The Ahmedabad Zoo has the requisite manpower, budget and veterinary support. For lack of an alternative and appropriate facility in the country, the zoo should be allowed to retain the elephant provided that it fulfills the following conditions:

1. It is recommended that her living space and environment has drastic remedial measures taken.
2. She needs to be given opportunity for walking freely in the enclosure, without chains, for at least 18-20 hours a day. Drastically reducing the tethering hours will be beneficial. Night tying is not recommended and if necessary, walls and barriers should make their space secure and prevent them from walking out. **Ideally, requisite barriers should be the mode of confinement rather than chains.**
3. Roopa needs the presence of one or more female elephant companions. Her isolation will cause both physical and psychological damage in the years

ahead. In the wild, elephants live in a socially complex, cohesive and mutually dependent matriarchal society. Adult males are peripheral to this structure, coming together only for mating or occasional interaction with their natal herd. To keep Roopa isolated is a negative deviation from the mutually dependent, closely bonded and beneficial herd structure of wild elephants. The elephant Appraisal Committee should identify female zoo elephants that may be moved here or Roopa moved out where appropriate spaces and companions exist.

4. The elephant does not have foraging or opportunity to be in natural surroundings. The practice of putting her in confinement for 22-24 hours and in no activity needs to be reversed. **It is recommended that she should be confined for 4-6 hours, if necessary, and allowed to walk freely and indulge in species specific behavior for 16 hours.**
5. The lack of the presence of water, which the elephant can access at will, need to be reversed in the proposed enclosure. Water should be freely and easily available for them and not dependent on the mahouts' presence.
6. The construction of the proposed enclosure should be initiated immediately. In the interim period, it is recommended that she be tethered by long chain in the shade of trees and be allowed to forage in a wooded area within the zoo premises, for at least two hours every evening, after the zoo closes to the public.
7. The mahout should be sent for orientation training and exchange of skills and knowledge of existing elephant husbandry from other camps and states like Assam, Tamil Nadu or Karnataka for exposure and education.

Sd/-

(K. K. Sarma)

Sd/-

(Suparna Baksi Ganguly)

Sanjay Gandhi Biological Park, Patna, Bihar

Background:

The CZA Appraisal team for Zoo Elephants visited the above mentioned location on the 31st August, 2012. Dr. K. K. Sarma, Professor & Head, Dept. of Surgery & Radiology, Veterinary College, Guwahati, Assam, and Ms. Suparna Baksi Ganguly, President & Trustee, CUPA (Compassion Unlimited Plus Action) & WRRRC (Wildlife Rescue & Rehab Center), Bangalore, Karnataka comprised the visiting team.

Officers present:

1. Shri Abhay Kumar, Zoo Director
2. Shri Pravin Kumar - DCF
3. Dr. Ajit Singh – Veterinarian
4. Shri A.K.Varma , Zoo Range Officer

Elephant and Mahout Details:

There is only one female elephant – Mala – aged approximately 39 years as per records available, currently housed in the zoo. She had been purchased from Sonapur Mela in 1978, at the age of 5 years.

Two elephants were subsequently acquired from a circus company, which had abandoned all the circus animals including the elephants, during a flood situation in the State. These two elephants - 22 year old female named Roopa and a 22 year old male named Amrit - were housed together in the enclosure. In 2005, (before the 2009 ban on zoo elephants) both these elephants were sent to the Bethia Tiger Reserve for patrolling purposes. At the TR, both were placed in different sections of the Reserve and had no interaction with each other. As per the observations of the officials present, the physical condition of these two elephants had deteriorated considerably in the seven years that they had been in the Tiger Reserve and there

has been a move to get them back to the zoo. Mala has been in total isolation since then. She has had no interaction with any other elephants.

Elephant Mala is looked after by two mahouts, whose details are below. Their experience in this field is from looking after the zoo elephants. They are locally from Bihar.

<u>Name</u>	<u>Designation</u>	<u>Age</u>	<u>Qualification</u>	<u>Salary</u>
1. Sri Ravindra Prasad (Experience 21years)	Senior Mahout	45 years	Std.V11 Pass	12,050
2. Sri Jawahar Rai (Experience 5 years)		32 years	Std. X Pass	8,520

Both are Permanent employees with all benefits. Annual medical tests for keepers are regularly done, according to information received.

Enclosure size

The zoo encompasses an area of 153 acres. The current elephant enclosure is about 5700 sq. mts., approximately 2+ acres. This represents the elephant enclosure to be allocated less than 1.5% of the total available area in the zoo.

Mala's night shelter, where she was examined by the team, spans an area of approximately 20x15x18 ft. The elephant is confined within the enclosure only for the night, reportedly. Her hind leg is restrained by a short chain (about 3 ft.) for about 8-9 hours in a day. The roof is made of concrete with a stone floor. Mala is reportedly taken for a daily walk for 1-2 hours within zoo premises. The substrate on which she is walked is mixed – of earth, concrete or tiles. She is reportedly walked for 5-6 kms per day.

Hygiene

Enclosure, when visited was scrupulously clean. Dung was not in sight.

Water source

The elephant was reportedly bathed in the current shelter. The water is drawn from a bore well. In her current night shelter, there is no opportunity for dust bathing, wallowing, or any movement since one of the back leg was chained and the front leg tethered. Drinking water cannot be accessed by the elephant at will.

Exercise

Mala is reportedly walked everyday for 1-1.5 hours, every morning. The timings are from 6.00AM till 7.30 AM. She is also taken to the jungle trail.

Medical

1. Screening for intestinal parasites and routine veterinary care including deworming and fecal examination is done.
2. There are two veterinarians to look after the animals.
3. Foot conditions are moderate to good with one broken and infected and cracked toenail. Nails were of proper length.
4. Vaccinations are not in practice
5. Measurement of body parameters and weight have never been done

Health

Mala displays signs of boredom, inactivity and loneliness. There is slight lameness in one of her hind legs, a chronic fistulous wound in the left arm region on the lateral side and ulcerative wounds in both the elbows, which indicate that she is made to sit on concrete or pebbled floor. Her skin is dry and scaly, indicating that she is not being given proper scrubbing at bath time and there may be vitamin- A deficiency as well.

Nutrition

The diet chart and nutritional regimen followed daily in the zoo for elephant Mala is given below:

Species: Elephant (Adult)

Sl. No.	Item Name	Weight in Kg/day	Remarks
1.	Deermixture	6 kgs.	Makka(maize),choker (wheat bran), chana (Bengal gram), wheat (Broken), salt, khalli (oil cake)
2.	Sugarcane	40 kgs.	From Oct. to March
3.	Berseem (grass)	75 kgs.	From Nov. to April
4.	Sudan (grass)	100kg	From April to Oct.
6	Paddy straw	As per requirement	
7.	Mineral & supplements	40 gms. Per day	
8.	Mahua flowers	Ad libitum	In season

Interaction and Environmental Enrichment

The zoo has not made any effort to emulate the natural conditions for elephant Mala. However, it is understood that the exact conditions can never be recreated with the limited space and resources; therefore attempt needs to be made to eliminate all kinds of stress by giving them physical and psychological comfort within the limited zoo and enclosure environment. The best form of enrichment for an elephant is the company of the con specifics that is member of the same species for company. After the sending away of her mates in 2005, Mala has become lonely and in course of time, this loneliness will affect her physical and psychological wellbeing. Therefore, it is suggested that another lonely female (where available) may be searched from any other Indian zoo for Mala's company or even it may be other way round also, depending on the resources and space availability of the receiving zoo. Getting back her former companions from the Bethia Reserve, in case of their inability to adjust to forest conditions, may also be an option.

The visiting team feels that the available space is not being utilized by the elephant at present; this should be changed immediately. She should be delivered fodder in different parts of the enclosed area under shades, and encouraged to spend more time on the ground rather than inside the concrete shed.

Behavior

The elephant is currently kept in an inappropriate and inadequate environment. Mala is chained for 22 hours. Though reportedly calm, she has no opportunity to display species specific behavior. She obeyed mahout commands. Mahouts had no stick or ankush with them, when approaching her.

Response of officials

The visiting team met with the Chief Wildlife Warden, Dr. D.K.Shukla. The officials are keen to improve the standard of living of the elephant. However, with the ban on zoo elephants and no alternative in sight for housing them, they propose the possibility of creating a better life for the elephant till her lifespan. The zoo vet also sought suggestions for proper healthcare administration, which did not seem well attended so far. The officials expressed interest to bring back the two elephants previously sent to Bethia Tiger Reserve, in view of their deteriorating condition.(May need verification by an independent and elephant specific veterinarian) .

Recommendations

The Patna Zoo has the requisite manpower, budget and veterinary support. For lack of an alternative and appropriate facility in the country, the zoo should be allowed to retain the elephant provided that it fulfills the following conditions:

1. It is recommended that her living space and environment has drastic remedial measures taken.
2. She needs to be given opportunity for walking freely in the enclosure, without chains, for at least 18-20 hours a day. Drastically reducing the tethering hours will be beneficial. Night tying her inside the shelter should be minimized and gradually eliminated. **Ideally, requisite barriers should be the mode of confinement rather than chains.**

3. Mala needs walking outside her enclosure for more duration in the cooler hours of the day. She need to be walked on earthen ground and allowed to forage in the vegetation in the forest area of the zoo.
4. Mala needs the presence of one or more female elephant companions. Her isolation will cause both physical and psychological damage in the years ahead. In the wild, elephants live in a socially complex, cohesive and mutually dependent matriarchal society. Adult males are peripheral to this structure, coming together only for mating or occasional interaction with their natal herd. To keep Mala isolated is a negative deviation from the mutually dependent, closely bonded and beneficial herd structure of wild elephants. The elephant Appraisal Committee should identify female zoo elephants that may be moved here or Mala moved out where appropriate spaces and companions exist.
5. The elephant does not have foraging or opportunity to be in natural surroundings. The practice of putting her in confinement for 22-24 hours and in no activity needs to be reversed. **It is recommended that she should be confined for 4-6 hours, if necessary, and allowed to walk freely and indulge in species specific behavior for 16 hours within her enclosure and also on the jungle trail.**
6. The lack of the presence of water, which the elephant can access at will, needs to be reversed. Drinking water should be freely and easily available and not dependent on the mahouts' presence. She needs to be bathed in a place where her body is submerged under ample water and sufficiently scrubbed by appropriate scrubbing material. Care should be taken that her drinking water is not contaminated by faecal matter.
7. The mahout should be sent for orientation training and exchange of skills and knowledge of existing elephant husbandry from other camps and states like Assam, Tamil Nadu or Karnataka for exposure and education.

Sd/-

(K. K. Sarma)

Sd/-

(Suparna Baksi Ganguly)

Bhagwan Birsa Biological Park, Ormanjhi, Ranchi, Jharkhand

Background:

The CZA Appraisal team for Zoo Elephants visited the above mentioned location on the 1st September, 2012. Dr. K. K. Sarma, Professor & Head, Dept. of Surgery & Radiology, Veterinary College, Guwahati, Assam, and Ms. Suparna Baksi Ganguly, President & Trustee, CUPA (Compassion Unlimited Plus Action) & WRRC (Wildlife Rescue & Rehab Center), Bangalore, Karnataka comprised the visiting team.

Officers present:

1. Shri P.K.Verma IFS– CF & Zoo Director
2. Shri R.N. Thakur – ACF
3. Dr. Ajay Kumar – Veterinarian
4. Shri J.P. Bhagat & 5. Shri Arun Kumar - Zoo Range Officers

Elephant and Mahout Details:

There are 3 elephants - one female and two males housed in the Park. All ages are approximate, since all have been rescued from the wild.

Samrat – 14 years, male, rescued from Chaibasa forest (W.Singhbhum) in 1998, at approx.1 month of age. (Microchip No. 00064DBF08)

Ramu – 9 years, male, rescued from Saraikela, Kharsawan Forest Division in 2006, at approx.3 years of age (Microchip No.0006485D89)

Lakhi – 15 years, female, rescued from Bero Forest Range in 2003, at approx. 6 years of age (Microchip No. 00064FIDA8)

The elephants are looked after by six mahouts, whose details are below. Their experience in this field is from looking after the zoo elephants. Senior Mahout is from Bihar and other 5 are locally from Jharkhand.

<u>Name</u>	<u>Designation</u>	<u>Age</u>	<u>Qualification</u>	<u>Salary</u>
1. Sri Mahendra Singh (Experience 15 years)	Senior Mahout	44 years	Std. X Pass	61,920.00
2. Sri Madan Mahto (Experience 12 years)		32 years	Std. VII Pass	61,920.00
3. Sri Puran Pahan (Experience 6 years)		39 years	Intermediate	52,200.00
4. Sri Chunilal Mahto (Experience 5 years)		35 years	Std. V III	52,200.00
5. Sri Baiznath Mahto (Experience 6 years)		31 years	Std. V	52,200.00
6. Sri Mantu Pahan (Experience 6 years)		36 years	Std. V	52,200.00

All are Daily Wage employees. Annual medical test for all keepers are conducted regularly, according to the information.

Enclosure size

The zoo encompasses an area of 104 Ha. / 228 acres. The current elephant enclosure is about 2.5 acres approximately. This represents the elephant enclosure to be allocated little over 1 % of the total available area in the zoo.

Elephants have 3 individual night shelter, where they are tied at dusk. Each enclosure dimension is about 15ft. x 15ft.x 25 ft. The elephant is confined within the shed only for the night, reportedly. The hind leg is restrained by a short chain (about 3 ft.) for about 8-9 hours in a day. The roof is made of concrete with a stone floor. They are taken for a daily walk for 1-2 hours within zoo premises, twice a day. The substrate on which they are walked is mixed – of earth and concrete. They are reportedly walked for 10 kms per day.

Hygiene

Enclosure, when visited, was clean.

Water source

The elephants are bathed in a concrete tank which is a part of their enclosure. The water source is from a deep bore well. Water is changed once in 15 days. The tank dimensions are 40 ft. x 30ft. x 7 ft. with a sloping gradient, giving an opportunity for submersion and wallowing. Their enclosure provides ample opportunity for dust bath, mud bath and the vegetation is thick. Drinking water can be accessed by the elephant at will, in a separate water tank within the enclosure.

Exercise

The elephants are walked everyday for 1-1.5 hours, morning and evening. The timings are from 6.00AM till 7.30 AM. And from 5.30 to 6.30 or 7 PM. They are walked inside the zoo premises.

Medical

1. Screening for intestinal parasites and routine veterinary care including deworming and fecal examination is done every 6 months.
2. There is one veterinarian to look after the animals.
3. Foot conditions are good. Nails were of proper length.
4. Vaccinations are given twice in a year (Jan. & Sept.) against FMD.
5. Measurement of body parameters and weight has never been done

Health

The male Samrat was in post-musth stage. This was his second year of coming into Musth, lasting for a period of 20 days. He had been tethered in the enclosure and was allowed to interact with the other elephants. For this period he is not walked. He had started displaying some dominance over the younger male.

Nutrition

The diet chart and nutritional regimen followed daily for the zoo elephants is given below:

Species: Elephant (Juveniles & young Adult)

Sl. No.	Item Name	Weight in Kg/day	Remarks
1.	Rice	01 kgs.	
2.	Jaggery	01 kgs.	
3.	Gram	03 kgs.	
4.	Banana	03kg	
6	Cucumber	10 kg	April to Sept.
7.	Sugarcane	10 kg	October to March
8.	Salt	50gms.	
9.	Green grass, branches & leaves	100 kgs.	

Interaction and Environmental Enrichment

This zoo has made an effort to emulate the natural conditions for the animals. However, it is understood that the exact conditions can never be recreated with the available space and resources; therefore there has been a sincere attempt to give physical and psychological comfort within the enclosure. The best form of enrichment for an elephant is the company of the conspecifics that is member of the same species for company. The mixed company of three young elephants, though not an ideal herd size, is still preferable to the company of only two males or one male and a female. The bathing pool is a positive feature since water and ability to submerge and soak has made a difference to the skin condition of the elephants.

The visiting team felt that the available space is not being utilized by all the 3 elephants at one time ; sometimes one or two of the elephants are tied on a raised cement platform for display for, reportedly, a couple of hours. This could be changed immediately by distributing fodder in different parts of the enclosed area under trees shades within the enclosure, and encouraged to spend more time on the grounds rather than to be tethered inside or outside. Vegetation inside the enclosure

seemed too dense, belying the assertion that the elephants were left free for 16 hours of the time.

Behavior

The elephant are currently kept in an environment which can be improved with little effort. Though reportedly calm, the team had no opportunity to witness any species specific behavior. They obeyed mahout commands. Mahouts had no stick or ankush with them, when approaching them. Only Ramu's mahout was noticed with an ankush.

Response of officials

The team met with the CWW Dr. A.K.Malhotra. He and the other officials are keen to retain the elephants and improve the standard of living, area size and environment further. However, with the ban on zoo elephants and no alternative housing or care center available yet, they propose the possibility of creating a better life for these rescued elephants in the zoo itself. The zoo vet also sought suggestions for proper healthcare administration for the elephants.

Recommendations

The Ranchi Zoo has the requisite manpower, budget and veterinary support. For lack of an alternative and appropriate facility in the country, the zoo should be allowed to retain rescued elephants provided that it fulfills the following conditions:

1. It is recommended that their living space and environment is immediately enlarged by enclosing 5-6 hectares of additional and available land, adjoining the facility.
2. They need opportunity for walking freely in the enclosure, without chains, for at least 18-20 hours a day. Drastically reducing the tethering hours will be beneficial. Night tying her inside the shelter should be minimized and gradually eliminated. **Ideally, requisite barriers should be the mode of confinement rather than chains.**
3. The elephants do not get to forage and graze, though there is ample opportunity for them to do so. The elephant enclosure as well as the zoo is

amidst forest and natural surroundings. The practice of putting them in confinement for many hours needs to be reversed. **It is recommended that they should be confined for 4-6 hours, if necessary, and allowed to walk freely and indulge in species specific behavior for 20 hours within their enclosure and walked outside on the jungle trail.**

4. Walking outside their enclosure for more duration in the cooler hours of the morning and evening should be backed by walking on earthen ground and being allowed to forage and graze.
5. Lakhi needs the presence of one or more female elephant companions. Her isolation from female elephants will cause loneliness and psychological damage in the years ahead. In the wild, elephants live in a socially complex, cohesive and mutually dependent matriarchal society. Adult males are peripheral to this structure, coming together only for mating or occasional interaction with their natal herd. To keep Lakhi isolated from female elephant society is a negative deviation from the mutually dependent, closely bonded and beneficial herd structure of wild elephants. The elephant Appraisal Committee should identify female zoo elephants that may be moved here, so that Lakhi can have an older or younger female companion.
6. Drinking water should be accessed by the elephant at will. Water should be freely and easily available and not dependent on the mahouts' presence or absence.
7. A musth enclosure needs to be planned so that the male elephants can be confined with the space during pre and post musth as well. It should have access to the main enclosure for allowing interaction, if the other elephants feel the need to do so. Care to be taken that the enclosure planned does not become an enclosed shed where the elephant has to be shackled for 24 hours for 30 days or more.
8. The mahouts should be sent for orientation training and exchange of skills and knowledge of existing elephant husbandry from other camps and states like Assam, Tamil Nadu or Karnataka for exposure and education.

Zoological Gardens, Alipore, West Bengal

Background:

The CZA Appraisal team for Zoo Elephants visited the above mentioned location on the 2nd September, 2012. Dr. K. K. Sarma, Professor & Head, Dept. of Surgery & Radiology, Veterinary College, Guwahati, Assam, and Ms. Suparna Baksi Ganguly, President & Trustee, CUPA (Compassion Unlimited Plus Action) & WRRRC (Wildlife Rescue & Rehab Center), Bangalore, Karnataka comprised the visiting team.

Officers present:

1. Dr. K.L.Ghosh, IFS, Director, Alipore Zoo
2. Shri S. Bhattacharyya, Asstt. Director, Alipore Zoo
3. Dr.D.N.Banerjee, Veterinary Officer, Alipore Zoo

Elephant and Mahout Details:

There are 3 female elephants housed in the Alipore Zoo. Two of the elephants are captive born from the Jaldapara Elephant Camp of West Bengal. One was rescued from the wild.

Mumtaz - 23years (as on Sept 2012), female, acquired 1992, from Jaldapara WLS, Jalpaiguri, at the age of 3 years. (TROVAN UNIQUE 00064DF609)

Uttara – 15 years (as on Sept. 2012), female, acquired 2000, from Hollong, Jaldapara, Jalpaiguri, at the age of 3 years (TROVAN UNIQUE 00064DD62D)

Phulwanti – 16 years (as on Sept. 2012), female, acquired 1995, from Jaldapara WLS, Jalpaiguri. (TROVAN UNIQUE 00064DFO7F)

The 3 elephants are looked after by two mahouts, whose details are below.

<u>Name</u>	<u>Designation</u>	<u>Age</u>	<u>Qualification</u>	<u>Salary</u>
1. Sri Md. Sanir PM (Experience 11+years)	2 nd mahout	32 years	Std. VIII Pass	Rs 13,801

2. 2Sri Ashok Ram Senior Mahout 41.9 years Std. VII Pass Rs.13, 990.00
(Experience 12 +years)

All are permanent employees. **Annual medical test** for all keepers are conducted regularly, according to information received.

Enclosure size

The zoo encompasses an area of 20.04 Ha. The current elephant enclosure is about 22,000sq ft. with dimensions of 200' (Length) x 110' (Width). This represents the elephant enclosure as less than 4.54% of the total available area in the zoo.

Elephants have 3 individual night shelter, where they are tied at dusk. Each individual shed dimension is approx. 10x20x15ft. The elephant is confined within the shed from 4.30 pm every evening to 8 am next morning. The hind leg is restrained by a short chain (about 3 ft.) and the elephant is so confined for 16 hours in a day. The roof is made of concrete with a stone floor. There are no evening or morning walks provided for the elephants of this zoo.

Hygiene

Enclosure, when visited during, late evening had dung and urine, since the cleaning regimen is done at 8 am, only once a day in the shed.

Water source

The elephants are bathed in a concrete tank which is a part of their enclosure. The water source is from a nearby pond. Water is changed once in 3 days. The tank dimensions are 40x30x3 ft. Their enclosure provides no opportunity for dust bath, mud bath and the space is highly inadequate. Drinking water cannot be accessed by the elephant at will. Potable water is available from the Municipal Corporation.

Exercise

There is no opportunity for any exercise.

Medical

1. Routine veterinary care including de-worming, vaccination against FMD are undertaken. Regular supplementation of vitamins & minerals are provided.
2. There is one veterinarian to look after all the zoo animals.
3. Measurement of body parameters and weight has never been done

Health

According to the zoo authorities, there are currently no health problems.

Nutrition

The diet chart and nutritional regimen followed daily for the zoo elephants is given below:

Species: Elephant (Juveniles & Adult)

Sl. No.	Item Name	Weight in Kg/day	Remarks
1.	Boiled Rice	1.500 kgs.	
2.	Molasses / Jaggery	0.700 kgs.	
3.	Soaked Gram	4.500 kgs.	
4.	Banana	2.5kg	
5.	Green Leaves, Branches of Ficus Trees, Sugarcane Top	100 kg	
6..	Sugarcane	10 kg	
7.	Salt	0.200gms.	

8.	Wheat Bran	6.0 Kg	
9.	Paddy	4.0 kgs.	
10.	Boiled Pulse	1.0kgs.	
11.	Chapati	1.250gms.	
12.	Powdered gram	0.300gms.	
13.	Paddy straw	2.0 kgs.	

Interaction and Environmental Enrichment

The Alipore Zoo, one of the oldest in the country, reflects the zoo design and philosophy of the 19th century zoo keeping, where no effort is made to emulate the natural conditions for the elephants. Though it is understood that the exact conditions can never be recreated with the available space and resources, there has been no attempt to give physical comfort or even align it loosely to a natural elephant environment.

However, the best form of enrichment for an elephant is the company of the conspecifics that is member of the same species for company. The mixed company of three young female elephants, though not an ideal herd size, is still preferable to an isolated elephant.

The visiting team felt that the available space is grossly inadequate. The available practical usage of space is restricted to a mere 16-18000 sq ft. for 3 elephants, minus the space for the night sheds and water enclosure.

The grounds have become bare with muddy accumulations and this may prove harmful in the long run, especially during the rainy season. The balance period is spent in the stone floored night sheds.

Behavior

The elephant are currently kept in an environment which cannot be improved due to shortage of space. The team had no opportunity to witness any species specific behavior. They obeyed mahout commands. Mahouts had ankush with them, when approaching them.

Response of officials

The Zoo Director and other officials are keen to retain the elephants, but have no suggestions to improve the standard of living, area size and environment. However, with the ban on zoo elephants and no alternative housing or care center available yet, there is little possibility of creating a better life for these zoo elephants.

Recommendations

Though the Alipore Zoo has the requisite manpower, budget and veterinary support, the environment is not conducive for elephants. The zoo is in the middle of urban Kolkatta and there is constant sound and pollution from traffic and human beings.

It is recommended that the zoo elephants should be shifted to an alternative and appropriate care center facility in the country.

Since there are no recognized elephant care centers in India, the elephants should be sent to the Elephant Camp in Gorumara Wildlife Sanctuary.

Sd/-
(K. K. Sarma)

Sd/-
(Suparna Baksi Ganguly)

Nandankanan Zoological Park, Bhubaneswar, Odisha

Background:

The CZA Appraisal team for Zoo Elephants visited the above mentioned location on the 4th March, 2013. Dr. K. K. Sarma, Professor & Head, Dept. of Surgery & Radiology, Veterinary College, Guwahati, Assam, and Ms. Suparna Baksi Ganguly, President & Trustee, CUPA (Compassion Unlimited Plus Action) & WRRC (Wildlife Rescue & Rehab Center), Bangalore, Karnataka comprised the visiting team.

Officers present:

1. Dr Sudarshan Panda IFS Zoo Director
2. Shri Chittaranjan Mishra, OFS-I (SB), Deputy Director
3. Shri Kamal Lochan Purohit Asst. Director
4. Dr. Nalini Mohanty SVO
5. Dr. Sarat Kumar Sahu - Vety Asst. Surgeon
6. Dr. Anil Kumar Das - Leave Reserve Vety Asst Surgeon
7. Dr. Pravas Kumar Roy Consultant SVO

Elephant Details:

There are five females and two male elephants in varying age groups:

Prema – approx. age 58 years – brought from Vandalur Zoo in 1985 (MCid-0006484F61)

Basanti – approx. age 48 years – brought from Vandalur Zoo in 1985 (MCid-000648312A)

Heera – 15 years – Rescued from Chandaka Rng. Brought in 1998 at age 3months(MCid-00064DF7AC)

Juli – 4 years – Rescued from Dhenkanal Rng. Brought in 2009 at age 3 months

Jagan (M) – 3.7 years – Rescued from Sundargarh Rng. Brought in 2009 at age 3 months

Chandan (M) – 2.8 years – Rescued from Chandaka WLD. Brought in 2010 at age 15-20 days

Gouri – 4 months – Rescued from DFO Athagarh. Brought in 2012 at age of 1 month

Mahout Details

1. Sri Shyama Singh (for calf GOURI)
2. Sri Basanta Bhoi
3. Sri Mohan Soren
4. Sri Rushan Samal
5. Sri Arjuna Khamari (JULIE)
6. Sri Karia Hansda (JAGAN)
7. Sri Gangadhara Khamari (CHANDAN)

They are permanent employees with all benefits. Annual medical test for keepers in October annually,

Enclosure size

The zoo encompasses an area of 296 ha. The current elephant enclosure is 20,000 sq. mts. inclusive of a night shelter, approximately 5+ acres. This represents the elephant enclosure to be allocated less than 2.2% of the total available area in the zoo. Enclosure has shade trees and grass but did not give the impression that the elephants are allowed to use the available space.

The night shelter spans an area of approximately 132 sq. mts. (25.5 x 6x 6.0). The elephant is confined within the enclosure zone only for the night, reportedly. Their hind leg is restrained by a short chain (about 3 ft.) for about 16 hours in a day. The roof is made of concrete with a concrete floor.

The 3 sub adults and one juvenile calf are housed separately in 3 enclosures of approximately 600 sq. ft each, having concrete flooring and roof. They are left to play in a 9600 sq. ft yard, with trees and shade for about 8 hours a day. They are reportedly walked for 2 hours morning and evening for approx. 4-5 kms.

Hygiene

Enclosures, when visited were clean.

Water source

The elephants were bathed within the elephant enclosure which had a natural rain fed tank of adequate depth since the elephants could submerge completely. This was trawled periodically to clear of dung and mud. They were watered before their bath by a drinking water tank of potable water.

Exercise

They are reportedly taken for a daily walk for 2 hours, twice a day, within zoo premises. The substrate on which they are walked is mixed – of earth and concrete. They are reportedly walked for 8 kms per day.

Medical

1. Screening for intestinal parasites and routine veterinary care including deworming and fecal examination is done.
2. There are 3-4 veterinarians to look after the animals.
3. Foot conditions are moderate. The elephants had broken, cracked and overgrown cuticles and nails.
4. Vaccinations – FMD annually and HS bi-annually are in practice.
5. Regular measurement of body parameters and weight have never been done
6. The zoo officials confirmed that elephants had not reproduced.

Health

The 3 elephants seemed to be in good condition. There was lack of proper foot care and lack of adequate walking, leading to overgrown cuticles and nails. The 3 sub adults were in good health as well. The calf was still recovering and adjusting after its rescue from the field where it was found in a dehydrated condition.

Nutrition

The diet chart of the 3 sub adult elephants and calf are as follows:

FEED CHART FOR SUB-ADULT ELEPHANTS

Sl. No.	Item Name	Weight in Kg/day	Remarks
1.	Wheat	3.5 kgs.	
2.	Common grass	5 kgs.	
3.	Elephant fodder & NB21	25 + 25kgs.	
4.	Para grass	5kg	
6	Turmeric whole	25gm.	
7.	Molasses & Common salt	250 gms. + 25 gms	
8.	Coconut	1 no.	
9.	straw	1.5 kg	
10.	Castor oil	25 kg	
11.	Bamboo leaves	5 kg	
12.	Ripe bananas	250gms	
13.	Water Melon	4kg. (April-May)	
14.	Lactogen (FOR GOURI)	1-800 gms	

FEED CHART FOR ADULT ELEPHANTS

Wheat	5kgs
Common Grass & Elephant Fodder	50+50 kgs
NB 21 + Para Grass	75+75 kgs
Turmeric whole	100 gms
Molasses	400 gms
Common Salt	150 gms
Coconut	1 no.
Straw	1 kg
Castor Oil	100 gms
Mineral Mixture	30 gms
Bamboo Leaves (July-Oct)	10 kgs
Sugarcane (Jan. – March)	20kgs
Watermelon (April – May)	4 kgs

Interaction and Environmental Enrichment

In the zoo every attempts should be made to emulate the natural conditions for the animals. However, it is understood that the exact conditions can never be recreated with the limited space and resources; therefore the objective is to eliminate all kinds of stress by giving them physical and psychological comfort within the limited zoo environment. The best form of enrichment for an elephant is the company of the con specifics and free access to any part of the enclosure that the elephant chooses to move. This was not apparent since the vegetation of the enclosure seemed undisturbed.

The sub-adults were well adjusted and were bonded with their keepers.

Behavior

The adult elephants had little opportunity to display species specific behavior. They were obedient and were tied in an 18-20 hrs.time frame.

Response of officials

The officials were keen to retain the elephants and adhere to the recommendations and observations made. The officials sought advice on a better regime of foot care and healthcare.

Recommendations

The Nandankanan Zoo has the requisite manpower, budget and veterinary support. Importantly, the zoo officials seemed keen to extend the space by almost 10 acres, giving a free roaming space of 15 acres for 3 adult elephants. For lack of an alternative and appropriate facility in the country, the zoo should be allowed to retain the elephant provided that it fulfills the following conditions:

It is recommended that living space and environment is extended to incorporate the extensive land of the adjoining spaces, that is within the zoo's jurisdiction.

1. The elephants need to be given opportunity for walking freely in the enclosure, without chains, for at least 18-20 hours a day. Drastically reducing the tethering hours will be beneficial. Night tying her inside the shelter should be minimized and gradually eliminated. Night tying is not recommended and if necessary, walls and trench should make the space secure and prevent them from tampering with the gate. **Ideally, requisite barriers should be the mode of confinement rather than chains.**
2. All 3 elephants also need walking outside the enclosure, for more duration, in the cooler hours of the day and evening. They need to be walked on earthen ground and allowed to forage in the vegetation in the forest area of the zoo.
3. The presence of a water body should be made accessible to the elephants at will. Drinking water should be freely and easily available and not dependent on the mahouts' presence.
4. It is strongly recommended that the elephants be tethered, if necessary, by long chain in the shade of trees for short durations and not in the concrete night shelter. They need to be allowed to forage in the wooded area of their enclosure for most part of the day.

5. The mahout should be sent for orientation training and exchange of skills and knowledge of existing elephant husbandry from other camps and states like Assam, Tamil Nadu or Karnataka for exposure and education.
6. The 3 subadults would be sent to the Forest Camps for training as Kumki and patrol duty elephants, since Odisha has severe HEC and their presence would help in driving operations and as anti-depredation squads.

Sd/-

(K. K. Sarma)

Sd/-

(Suparna Baksi Ganguly)

Kapilash Mini Zoo, Kapilash, Dhenkanal, Odisha

Background:

The CZA Appraisal team for Zoo Elephants visited the above mentioned location on the 5th March, 2013. Dr. K. K. Sarma, Professor & Head, Dept. of Surgery & Radiology, Veterinary College, Guwahati, Assam, and Ms. Suparna Baksi Ganguly, President & Trustee, CUPA (Compassion Unlimited Plus Action) & WRRC (Wildlife Rescue & Rehab Center), Bangalore, Karnataka comprised the visiting team.

Officers present:

1. Shri H.K. Maharathha, D.F.O. Dhenkanal
2. Shri B.N.Samal, ACF, Dhenkanal
3. Shri Shivprasad Samai, Range Officer, Kapilash Rng.
3. Dr, B.N.Mishra, VAS, Kaimati (on a need based basis)

Elephant Details:

There are 2 juveniles and 1 calf in the following age groups:

Chandu (M) – approx. age 2.5 years – rescued from Baragarh Forest Division in December 2011

Uma (F) – approx. age 8 months – rescued from Sadangi Range, Dhenkanal Forest Division, Odisha in September 2012

Kartik (M) – 4.2 years – Received from Athagarh Forest Division, Odisha in July 2010

Mahout Details

<u>Name</u>	<u>Designation</u>	<u>Age</u>	<u>Qualification</u>	<u>Salary</u>	<u>Experience</u>	<u>Designation</u>
1. Sri Anil Kumar Das	Mahout	23 yrs.	Matriculate	Daily Wages labourer @ Rs. 150/- per Day		
2. Sushanta Dehury	Mahout	23 yrs.	Matriculate	Daily wages labourer @ Rs. 150/- per Day		

Annual medical test for keepers not conducted.

Enclosure size

The zoo encompasses an area of 26.64 ha. The current elephant rescue center 4 ha. This is inclusive of 3 night shelters, each approximately 15 ft x 15 ft. x 15ft. with concrete flooring and roof. The enclosure is part of the natural reserve forest and the Kapilash WLS. There are water bodies, shade trees, natural foliage and grass. Elephants are left in the area, without chains, but with their mahouts monitoring their movements. They are reportedly walked for 2 hours in the morning for approx. 8-10 kms. per day.

Hygiene

Enclosures, when visited were clean.

Water source

The elephants are bathed in the natural water body within the rescue center.

Exercise

They are reportedly taken for a daily walk for 2 hours, within the zoo premises. The substrate on which they are walked is mixed – of earth and mud. They are reportedly walked for 8 -10 kms per day.

Medical

1. The elephants are regularly de wormed.
2. Regular measurement of body parameters and weight have never been done

Health

The 3 elephants seem to be in good physical and psychological condition..

Nutrition

The diet chart of the 3 elephants are as follows:

01.ELEPHANT (KARTIKA)			
Received in Kapilash Zoo on dt.07.07.2010 from Athagarh Forest Division			
Green Fodder	250 kg	1	250 kg
Common grass	50 kg	1	50 kg
NB-21	75 kg	1	75 kg
Paragrass	75 kg	1	75 kg
Tree fodder	50 kg	1	50 kg
Bamboo leaves (July-Oct)	10 kg	1	10 kg
Sugarcane (Jan-Mar)	20 kg	1	20 kg
Turmeric Whole	100 gm	1	0.1 kg
Jagery(Molasses)	400 gm	1	0.4 kg
Common Salt	150 gm	1	0.15 kg
Coconut	1 no/week	1	1no
Seasonal fruits		1	
Watermelon (April-June)	4 kg	1	4 kg

(ii) UMA

(Age as on dt. 01.3.13 about 07 months)

Received in Kapilash Zoo on dt.04.09.2012 from Sadangi Forest Range

Age - 08 months to 09 months = 01 month i.e. for the month of April ' 13

Lactogen	1 kg	1	1 kg
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Cerelac	1 kg	1	1 kg
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Age 09 months to 01 yr = 03 month (for May June, July ' 13)

Lactogen	1 kg	1	1kg
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Cerelac	1 kg	1	1kg
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Ragi	250 gm	1	0.25 kg
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Wheat	250 gm	1	0.25 kg
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Rice	250 gm	1	0.25 kg
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Age 01 yr to 1yr 6 months = 06 months (from Aug 13 to Jan 14)

Lactogen III	475 gm	1	0.475 kg
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Cerelac II	1.5 kg	1	1.5 kg
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Raggi crushed	500gm	1	0.5 kg
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Molasses	200gm	1	0.2 kg
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Rice crushed	250gm	1	0.25 kg
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Broken wheat cooked	500gm	1	0.5 kg
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Tree fodder	5 gm	1	0.005 kg
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Ripe banana	150 gm	1	0.15 kg
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Turmeric powder	10 gm	1	0.01kg
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Common salt	25 gm	1	0.025 kg
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Caster oil	25 gm	1	0.025 kg
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Age 1yr 06 months & above = 02 months (feb to march 14)

Lactogen III	250 gm	1	0.25 kg
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Cerelac II	500 gm	1	0.5 kg
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Raggi crushed	800 gm	1	0.8 kg
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Molasses	100gm	1	0.1 kg
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Rice crushed	250 gm	1	0.25 kg
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Broken wheat cooked	1 kg	1	1 kg
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Soaked wheat	1 kg	1	1 kg
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Turmeric powder	10 gm	1	0.01 kg
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Ripe banana	250 gm	1	0.25 kg
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Castor oil	25 gm	1	0.025 kg
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Common salt	25 gm	1	0.025 kg
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Tree fodder	10 kg	1	10 kg
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(iii) CHANDU
(Age as on dt. 01.3.2013 about 1 yr 03 months)
Received in Kapilash Zoo on dt.24.12.2011 from Baragarh Forest Division

Age 01 yr 03 months to 1yr 6 months=03 months(April 13 to June 13)

Lactogen III	475 gm	1	0.475 kg
Cerelac II	1.5 kg	1	1.5 kg
Raggi crushed	500gm	1	0.5 kg
Molasses	200gm	1	0.2 kg
Rice crushed	100gm	1	0.1 kg
Broken wheat cooked	500gm	1	0.5 kg
Tree fodder	5 gm	1	0.005 kg
Ripe banana	150 gm	1	0.15 kg
Turmeric powder	10 gm	1	0.01kg
Common salt	25 gm	1	0.025 kg
Caster oil	25 gm	1	0.025 kg

Age 1yr 06 months and above = 09 months (from July 13 to March 14)

Lactogen III	250 gm	1	0.25 kg
Cerelac II	500 gm	1	0.5 kg
Raggi crushed	800 gm	1	0.8 kg
Molasses	100gm	1	0.1 kg
Rice crushed	250 gm	1	0.25 kg
Broken wheat cooked	1 kg	1	1 kg
Soaked wheat	1 kg	1	1 kg
Turmeric powder	10 gm	1	0.01 kg
Ripe banana	250 gm	1	0.25 kg
Caster oil	25 gm	1	0.025 kg
Common salt	25 gm	1	0.025 kg
Tree fodder	10 kg	1	10 kg

Environmental Enrichment

In the Dhenkanal Rescue Center, a sincere attempt has been made to emulate the natural conditions for the elephant calves. Though the exact conditions can never be recreated with the limited space and resources, the calves have plenty of natural space, physical and psychological comfort with the mahouts who seem very committed. They are naturally well behaved, very eager to follow commands, playful and well adjusted. The best form of enrichment for an elephant is the company of the conspecifics and free access to any part of the enclosure that the elephants choose to move. The sub-adults were well adjusted and bonded with their keepers. A positive aspect is that they have not been exposed to visitors leaving them undisturbed from the pressure of constant crowds.

Behavior

The juveniles have opportunity to display species specific behavior. They were playful, well behaved, well adjusted, were not tied for more than 8 hours. The calf lived with the mahouts in their attached quarter, adjacent to the night shelter.

Response of officials

The officials were enthusiastic and extremely interested to learn more about upkeep and care for the calves. They were keen to follow any recommendations made.

Recommendations

The Dhenkanal Rescue Center may need more experienced manpower in time to come. The present mahouts are committed and sincere in their service towards the sub-adult elephants. They may need more budget and veterinary support. Importantly, they have the natural space and peaceful environment, with off-display regulations in place. As one of the very few appropriate facilities in the country (others being the Vandalur Zoo & Guwahati Zoo Elephant rescue Centers for Rescued Wild Calves), the Dhenkanal Rescue Center should be allowed to continue with a rehabilitation plan in place once the calves are old enough for independent living.

Sd/-

(K. K. Sarma)

Sd/-

(Suparna Baksi Ganguly)

Indira Gandhi Zoological Park, Vishakapatnam

Background:

The CZA Appraisal team for Zoo Elephants visited the above mentioned location on the 5th March, 2013. Dr. K. K. Sarma, Professor & Head, Dept. of Surgery & Radiology, Veterinary College, Guwahati, Assam, and Ms. Suparna Baksi Ganguly, President & Trustee, CUPA (Compassion Unlimited Plus Action) & WRRRC (Wildlife Rescue & Rehab Center), Bangalore, Karnataka comprised the visiting team.

Officers present:

1. Shri G.Ramalingam DCF Curator, IGZP, Vishakapatnam
2. Shri K. Umamaheshwari, Asst. Curator IGZP, Vishakapatnam
3. Dr.V. Srinivas, Vety.Asst.Surgeon, IGZP, Vishakapatnam

Elephant Details:

There is one male elephant housed in the IGZP. Rescued from the wild, the elephant, since the age of 2.5 years, been housed at the zoo.

Krishna - 29years (00065F20C2)

Mahout Details

The elephant is looked after by two mahouts, whose details are below.

<u>Name</u>	<u>Designation</u>	<u>Age</u>	<u>Qualification</u>
1. Ch. Raju (Experience 18 years)	1 st mahout	41 years	traditional family
2. Ch. Arumugam (Experience 16 years)	2 nd mahout	38 years	traditional family

Senior mahout is a regular employee while the 2nd mahout is a daily wage worker. **Annual medical test** for all keepers are conducted regularly, according to information received.

Enclosure size

The zoo encompasses an area of 250 ha. or 625 acres. The current elephant enclosure is about 2 hectares or 5 acres. This represents the elephant enclosure as less than 0.8 % of the total available area in the zoo.

The enclosure has individual night shelters, where he is tied. Each individual shed dimension is about 15x15x25 ft approx. The elephant is confined within the shed from 4.30 pm every evening to 8 am next morning. The hind leg is restrained by a short chain (about 5 ft.) and the elephant is so confined for 16 + hours in a day. The roof is made of concrete with a stone floor. He is exercised within the zoo premises for 2 hours daily, twice a day.

When in musth, he is confined for 24 hours, for duration of the musth which lasts from Oct- Jan (4 months) and then under post musth phase for 2 months. Our visit coincided during this period. During musth, the animal has to be shackled by all 4 legs, needs to be tranquillized for changing chains and cleaning of the shed and does not permit any contact.

Hygiene

Enclosure, when visited was clean.

Water source

The elephant is bathed in a concrete tank which is a part of the enclosure. The water source is from bore well and the corporation supply. Though the enclosure provides opportunity for dust bath, mud bath and the space is natural and wooded, it was not clear whether the elephant had the opportunity to use the space. Drinking water cannot be accessed by the elephant at will.

Exercise

There is no opportunity for any exercise during musth.

Medical

1. Routine veterinary care including de-worming, vaccination against TT are undertaken.
2. There is one veterinarian to look after the zoo animals.
3. Measurement of body parameters and weight has never been done

Health

According to the zoo authorities, there are currently no health problems.

Nutrition

The diet chart and nutritional regimen followed daily for Krishna is given below:

Species: Elephant (Juveniles & Adult)

Sl. No.	Item Name	Weight in Kg/day
1.	Raagi powder	4 kgs.
2.	Molasses / Jaggery	2 kgs.
3.	Broken rice	1kg.
4.	Banana	1 doz.
5.	Coconuts	2 nos.
6..	Sugarcane	60 kg
7.	Banana fronds	500 kgs per 15 days
8.	Cattle feed	5 Kg
9.	Green Grass	100-200 Kg

Interaction and Environmental Enrichment

Though the physical environment is natural, wooded and offers enrichment in itself, it is not clear whether the elephant is able to partake of it. The best form of enrichment for an elephant is the company of the conspecifics that is member of the same species for company. The elephant is isolated and very lonely.

The available practical usage of space is restricted to its shed for 6 months of the year. When normal, it is walked for 2 hours reportedly.

Behavior

The elephant is currently kept in an environment which, due its status as a male elephant, cannot be improved nor can it be recommended that he be left free for any duration of time during 6 months of the musth period. The team had no opportunity to witness any species specific behavior. Mahouts had ankush with them, but since the animal was chained, it was not used.

Response of officials

The Zoo Director and other officials are keen to retain the elephant. They are willing to follow suggestions to improve the standard of living, area size and environment. However, with the ban on zoo elephants and no alternative housing or care center available yet, there is little possibility of creating a better life for this zoo elephant.

Recommendations

Though the Vizag Zoo has the requisite manpower, budget and veterinary support, the environment is not conducive for Krishna, without more land for free roaming and a companion elephant. Andhra Pradesh lacks elephant camps of any expertise. Krishna may have fared better in a well managed elephant camp with patrolling and other forestry duties, after he had time to acclimatize in a care center facility to forest living and foraging.

It is recommended that the zoo elephant enclosure has at least 5-10 acres added, a companion elephant and free roaming during the duration of the non-musth period.

Shifting to an alternative and appropriate care center facility in the country is not possible. Housing of the zoo elephants in NPs/WLS/TR has not had positive results. More than one zoo has expressed the desire to get back the elephant/s they have sent, since the elephants, after spending decades in the artificial zoo environment are unable to adjust to forest environment, camp regimen and free ranging activities. They need time for acclimatization and conditioning.

Forest Camps cannot provide care for each elephant's unique specific requirements which the zoo elephants need before they are thrown directly to cope in an alien environment.

Since there are no recognized elephant care centers in India, the elephants should be kept in the current space with mandatory two hour walks within the zoo premises, twice a day, before and after public hours. He needs opportunity for walking freely in the enclosure, without chains, for at least 18-20 hours a day. Drastically reducing the tethering hours will be beneficial. Night tying inside the shelter should be minimized and gradually eliminated. **Ideally, the enclosure should be the mode of confinement rather than chains, during the non-musth period.**

1. Drinking water should be accessed by the elephant at will. Water should be freely and easily available.
2. The mahouts should be sent for orientation training and exchange of skills and knowledge of existing elephant husbandry from other camps and states like Assam, Tamil Nadu or Karnataka for exposure and education.

Sd/-
(K. K. Sarma)

Sd/-
(Suparna Baksi Ganguly)

Nehru Zoological Park, Hyderabad, Andhra Pradesh

Background:

The CZA Appraisal team for Zoo Elephants visited the above mentioned location on the 6th March, 2013. Dr. K. K. Sarma, Professor & Head, Dept. of Surgery & Radiology, Veterinary College, Guwahati, Assam, and Ms. Suparna Baksi Ganguly, President & Trustee, CUPA (Compassion Unlimited Plus Action) & WRRC (Wildlife Rescue & Rehab Center), Bangalore, Karnataka comprised the visiting team.

Officers present:

1. Shri P.Mallikarjuna Rao IFS , APCCF & Director, Hyderabad
2. Shri A. Shankaran, Dy CF, Curator
3. Dr.M. Navin Kumar, Dy Director (Retd.)/Consultant
1. Dr. M.A.Hakeem, Asstt Director (Vety.)
2. Dr. P. Srinivas, Vety Asst. Surgeon
3. Shri S. Ramesh, Asst. Curator

Elephant Details:

There is 1 male and 4 females housed in the zoo. One elephant has been wild caught from Tirumala Hills in 1994, two female elephants were purchased from the Theppakadu Camp in Tamil Nadu, one female elephant was transferred from Public Gardens and one female elephant has been housed which belongs to the Nizam Trust.

Vijay (M) - 31years (0065FIFBG)

Asha (F) – 40 years (00065F3A69)

Rani (F) – 74 years (0006525638)

Rajini (F) – 42 years (00065F4DCI)

Jamuna (F) – 39 years (0006599COD)

Mahout Details

The elephant is looked after by two mahouts, whose details are below.

<u>Name</u>	<u>Designation</u>	<u>Age</u>	<u>Qualification</u>	<u>Salary</u>
1. Shri S. Manikantha	1 st Mahout	29 yrs.	Class V	Rs.11,000/-
2. Shri S. Murugan	2 nd Mahout	28 yrs.	Class V	Rs.11,000/- (Experience:

Both recruited from Topslip Elephant Camp in Tamil Nadu)

Both are permanent employees. **Annual medical test** for all keepers are conducted regularly, according to information received.

Enclosure size

The zoo encompasses an area of 380 acres. The current elephant enclosure is about 7.2 acres + 3 acres of adjoining land. This represents the elephant enclosure as a little above 2 % of the total available area in the zoo.

The enclosure has individual night shelters, where the elephants are reportedly chained for only 6 hours daily. Each individual shed dimension is about 15x15x25 ft approx. However, this may not be accurate, since the elephants were chained through the night, after the zoo close at 5 pm. It was likely that with the present chains (approx. 4-5 ft.), the hind leg is restrained and the elephant is so confined for 16 + hours in a day. The roof is made of concrete with a stone floor. The elephants are reportedly exercised 10 hours daily.

Hygiene

Enclosure, when visited was clean.

Water source

The elephants are bathed in a concrete tank which is a part of the enclosure. The water source is from bore well. The enclosure provides opportunity for dust bath, mud bath and the space is natural and wooded. The elephants have opportunity to use this space and access drinking water at will.

Exercise

For the male, there is no opportunity for any exercise during musth. The female elephants were walked around the zoo premises.

Medical

1. Routine veterinary care including de-worming, vaccination against TT are undertaken.
2. There are two veterinarians to look after the elephants
3. Measurement of body parameters and weight has never been done

Health

According to the zoo authorities, there are currently no health problems.

Nutrition

The diet chart and nutritional regimen followed daily for Krishna is given below:

Species: Elephant (Juveniles & Adult)

Sl. No.	Item Name	Weight in Kg/day
1.	Thunga Grass	100 kgs.
2.	Para Grass	150 kgs
3.	Lucerne	5kg.
4.	Peepal	20 kg
5.	Boiled rice	3kgs.
6..	Sugarcane	5 kg
7.	Ragi straw	2kgs
8	Banana	2 kg.
9	Salt	1 kg
10	Jaggery	1 kg
11	Dry Coconut	2 nos.
12	Mineral Mix	100 gms
13	G. N. Oil	Once in 5 days
14	Kadvi (seasonal)	50 Kg
15	Banana Stem	5 Kg

Interaction and Environmental Enrichment

The physical environment of the elephant enclosure is natural, wooded and offers enrichment in itself. The enclosure has mud pools, water body, grasses, shade though currently, inadequate. The best form of enrichment for an elephant is the company of the con specifics for company. The elephants have constant interactions and are reportedly without chains for the greater part of the day.

Behavior

The elephants were reportedly calm. The male was chained, due to onset of the pre-musth phase. The females had access to him. The older elephants had a spiked belt around her hind limb, which was removed on request from the committee. The team had opportunity to witness species specific behavior. Mahouts had ankush but were not used.

Response of officials

The Zoo Director and other officials are keen to retain the elephants. They are willing to follow suggestions to improve the standard of living, area size and environment. However, if the available space is arranged a little more imaginatively, the elephants may use it more which would be a positive development in their management.

Recommendations

The Hyderabad Zoo has the requisite manpower, budget and veterinary support, and land for an elephant care center, which is the concept this enclosure should embody. Some immediate improvements are necessary:

1. Large shade structure should be constructed to protect from the afternoon sun. It is advisable to make this of local materials for both coolness and blending with the environment. It should be placed in an appropriate location and direction for protection from the sun's rays.
2. Drinking water tanks should be placed at intervals of the land.
3. Fodder and feed can be alternated at various points, encouraging the elephants to search and forage for food.
4. Spiked foot collars should be banned and mahouts using them should be first educated about its dangers and then penalized if disobedient.
5. Male elephant, when in musth, should be tied with the other female elephants having access, by choice, to him.
6. Female elephant Rajani, as owned by a private trust, needs to be exempted from bi-annual processions, under veterinary advice. She is reportedly of unsound temperament and suffers from arthritic pains.
7. It is recommended that the zoo elephant enclosure, be increased, if other older elephants need to be admitted into this care center facility, operated by the Hyderabad Zoo.
8. All the elephants need the opportunity for walking freely in the enclosure, without chains, for at least 18-20 hours a day. Drastically reducing the tethering hours will be beneficial. Night tying inside the shelter should be minimized and gradually eliminated. **Ideally, the enclosure should be the mode of confinement rather than chains, during the non-musth period of the male elephant.**
9. The mahouts should be sent for regular refresher courses, training, exposure and exchange of skills and knowledge of existing elephant husbandry from other camps and states like Assam, Tamil Nadu or Karnataka for exposure and education.

Sd/-
(K. K. Sarma)

Sd/-
(Suparna Baksi Ganguly)



Elephant Exhibits at Nehru Zoological Park, Hyderabad (Above); National Zoological Park, New Delhi (Below)

