

Dickerson Park Zoo Elephant Management Philosophy

Social Structure

The elephant management philosophy of Dickerson Park Zoo is based upon an understanding of the elephant's behavior within its natural environment. Elephants are social animals that live in herds in the wild, in a matriarchal society. A dominant female who maintains order and provides direction leads the herd. The young are raised and protected by the female herd, including the matriarch and other females called "aunties." Elephants have a large capacity to learn and remember; in fact, like humans, much of their behavior is learned. The matriarch and older herd members provide instruction to younger elephants in communication, sources of food and water, migratory paths and other essential information. A hierarchy exists with lower or subordinate elephants being dominated by the higher-ranking elephants. The harmony of this type of organization is essential for survival in the wild. The chaos of each animal attempting to find food and water in a different direction or members of the herd squabbling among each other would lead to a loss of the family from predators, starvation and thirst.

As young males mature, the adult females push them out of the herd. These young males generally collect into small bachelor herds until they mature and begin experiencing periods of musth. Once they have reached full sexual maturity the males become solitary except during breeding.

At Dickerson Park Zoo the goal is to maintain a natural social structure whenever possible. The elephant management team discusses the behavior profiles of each elephant and attempts to discern which animals will be compatible in a social setting. Adjustments to the herd structures may be made if problems occur.

Cows and Calves

In any facility, captive elephants need instruction and guidance to live in a man-made environment. With cows and calves, humans are in a position to enter into the elephant's social structure and actually become a member of the elephant herd hierarchy. Although elephants may not view humans as other elephants, per se, they do perceive their handlers as part of their social group and can be taught to rely on them for direction.

Females and immature males are currently managed in a free contact system at Dickerson Park Zoo. Although the females and immature males are accustomed to minimal durations of chaining for medical or training purposes, they are generally housed off chains in social groups. Weather permitting, the cow/calf groups are housed together at the exhibit barn. In inclement weather, when they must be locked inside, the groups are split to accommodate indoor housing. Half of the herd is moved to the larger bull facility.

Bulls

Adult male elephants experience periodic episodes of musth in which they secrete viscous, odorous fluid from their temporal gland, dribble urine from their sheath, have a significant decrease in appetite and tend to exhibit an aggressive attitude. Due to this aggressive nature, bull elephants are managed in a confined contact system utilizing a rotational elephant restraint device. A system of positive reinforcement for bulls entering the restraint solicits a high rate of cooperation from them. They are given access to the elephant restraint device twice per day where they receive pellets and water. Single bull elephants are given access to the cow group when they are in the non-reproductive state of their cycle. Bull elephants are also given access to cows for planned breeding purposes.

AZA Elephant Management Guidelines

Husbandry

Housing

Dickerson Park Zoo currently has two elephant buildings. The exhibit barn is shared with the giraffes and includes a public area, service area and restroom. The elephant side of the barn has one 25'x30' concrete block stall with a barred front for visitor viewing. This stall has access to one 11,000 square foot yard with a four-foot sloping pool. The stall door is operated hydraulically.

The bull elephant facility is located ¼ of a mile away in an off-exhibit area of the zoo. This 60'x60' building includes five stalls, a service area, feed room, restroom and elephant restraint room. Three of the stalls measure 18'x20', another is 19'x34' and the last is 18'x30'. The hydraulic system and concrete reinforced walls and doors were designed to house the more powerful adult males. This building is surrounded on three sides by individual yards within visual, but not tactile contact. These yards are 11,000, 8,000 and 6,000 square feet.

Weather

The elephant management committee to determine when the elephants will have access outside has created weather guidelines. Generally, adult elephants will have access outside when the temperature is about 45 degrees F. Whenever calves are in the herd, they are locked inside when the temperature drops below 50 degrees F. Other conditions such as wind and precipitation may be factored into the decisions to lock the elephants inside. Under severe weather conditions such as tornado or thunderstorms, the elephants may also be locked inside.

Elephant Escapes

If a cow or calf escapes, the first person to discover it should notify the supervisor and elephant keepers. One keeper should keep the elephant in visual contact from a safe distance until the elephant keepers arrive. Other personnel should remove themselves and visitors to a safe location. The elephant keepers should go directly to the closest elephant facility to get their ankuses and then proceed to the elephant's location. At this time, the elephant keepers will guide the elephant back to their enclosure and secure them.

If a bull elephant escapes its enclosure, the first priority is to notify supervisors on the radio and have all non-essential staff members evacuate visitors from the zoo or more them to a safe structure. At this time either supervisory or hospital staff will begin preparing emergency equipment. Once the bull has been located, an elephant staff member needs to keep the bull in visual contact from a safe distance and alert other staff members as to his location.

If the bull remains near the bull elephant facility, elephant staff members may attempt to lure the bull back inside the enclosure with a secured cow (i.e. in an adjoining stall or corral).

If the bull moves away from the bull facility toward public areas, then either supervisory or hospital staff will use the zoo's 458-magnum rifle to dispatch the bull. The rifle should be aimed either directly under the chin into his chest for a frontal presentation or behind the front elbow in case of a lateral presentation.

Following any escape there will be a meeting of the elephant team to discuss the cause and remedies of the situation.

Health

In order to maintain the elephant's health, a protocol is in place for routine medical procedures and emergency situations that include:

- annual veterinarian examinations
- semi-annual *Mycobacterium tuberculosis* tests for elephants (annually for staff)
- semi-annual parasite examinations
- annual tetanus vaccinations
- annual hematology and blood chemistry panel
- routine skin care, including daily bathing and scrubbing and pressure spraying monthly
- routine foot care based on individual animal needs (1-6 week intervals)

With the exception of fecal collections, all medical procedures involving the bulls are performed in the elephant restraint device.

Nutrition

The elephants are provided twice daily with a commercially made alfalfa based pellet. These pellets are enriched with vitamins and minerals specifically formulated for elephants. Brome or orchard grass hay (8-12% protein) is provided ad libitum. Donor institutions provide treats such as baked goods and fresh produce as available. A liquid vitamin E supplement is given to all elephants three times weekly. Their serum level of Vitamin E is tested annually to determine the dose rates. Biotin is given daily to elephants with chronic foot care problems.

Reproduction

Dickerson Park Zoo maintains an active breeding herd including bulls and cows. The herd is reproductively managed to maintain a herd size suitable for the limited space in our facilities. Dickerson Park Zoo also cooperates with outside institutions for natural and artificial reproductive efforts. Blood is drawn weekly from resident cows for hospital staff to assay to determine estrous cycles and diagnose pregnancies for reproductive management. Cows from other institutions with suitable temperaments may be accepted for temporary breeding loans if their previous six months hormone evaluations demonstrate a normally cycling cow. At this time, the breeding herd at Dickerson Park Zoo has produced six offspring in-house and has produced six calves for other institutions.

Research

The staff at Dickerson Park Zoo has a strong commitment toward research as evidenced by their willingness to assist many researchers with their projects over the years. The staff has collected numerous samples and data in an effort to support research originated outside this zoo. These projects include reproductive research on Asian elephants which require collections of urine, serum, semen, fecal and ultrasonography samples, along with corresponding behavioral data. Studies involving the sense of olfaction in Asian elephants have also been conducted at Dickerson Park Zoo for predation and maternal recognition studies. Another groundbreaking study that was aided by sample collections at this institution was the search for the herpes virus in Asian elephants. Blood samples have also been taken from the Asian elephants at Dickerson Park Zoo to contribute to a DNA study, which will determine the genetic relationship among captive elephants in the United States. Asian elephants have also been involved in an archaeological study in which they manipulated a substrate in order to test a hypothesis concerning the path of dispersal of early humans in North America.

Numerous primary research projects have been conducted at Dickerson Park Zoo in conjunction with Southwest Missouri State University and Oklahoma State University. Reproductive and behavioral studies of Asian elephants are being conducted at Dickerson Park Zoo. These studies involve the collection of behavioral data as well as serum, semen, urine and fecal samples. These studies have contributed greatly to the body of knowledge in this species.

The combination of endocrine and semen collection studies over the last fifteen years at Dickerson Park Zoo have resulted in the first-ever artificial insemination of an elephant. Another endocrine study developed at Dickerson Park Zoo is fetal gender detection in utero of Asian elephants. This study gives elephant managers early information concerning their future herd dynamics so they can plan controlled breeding to fit within their facilities. A new study at Dickerson Park Zoo is the monitoring of thyroid stimulating hormone in Asian elephants. Although this study is centered on animals that are dysfunctional at other institutions, the knowledge gained from a healthy, reproductive herd is essential to diagnosing the problem that elephants at other zoos are experiencing. The knowledge gained from this study could return non-reproductive animals to a healthy state so they could contribute to the ever-diminishing gene pool of

Asian elephants in North America. The zoo is also involved in nutritional research. Dickerson Park Zoo's Asian elephant herd has been very productive, and ongoing milk sample collections from the cows for analysis are adding vital information to a very limited knowledge base. The male elephants at Dickerson Park Zoo are being studied using endocrine and behavioral data to characterize their episodic musth periods in an effort to better manage these highly-aggressive males. The elephants' communication systems are also being studied at Dickerson Park Zoo, with information related to estrus and births being the focal point of this study. Behavioral studies on the elephants at Dickerson Park Zoo include predation studies, environmental enrichment studies and lateral bias studies.

Exercise and Enrichment

Elephants are highly intelligent, therefore, mental and physical stimulation is vital to their well being. Since zoo elephants do not have to forage for their food, they often become sedentary and overweight. Exercise and enrichment is essential to the health of elephants in captivity. It is the keeper's responsibility to encourage the elephants to exercise and to stimulate them in the form of enrichment opportunities. At Dickerson Park Zoo, a variety of methods are used to facilitate these activities. The elephants are given access to outdoor yards whenever the weather permits to provide them with space to exercise and socialize. The cows are worked through a series of commands a minimum of twice a day that involve mental and physical exercises. Forage in the form of boxes, feedbags with treats inside and scattered produce are provided. Browse is also provided in season. For the bulls' exercise, the cows are used as a stimulant by placing them in the bull yards when possible. Enrichment items such as elephant-size chimes, tires, logs, fiddle chains and elephant tubs are also provided on a variable basis.

Translocation

If an elephant is scheduled to be transported from Dickerson Park Zoo to another facility, a time period will be allotted for crate or trailer training whenever possible.

Training

New Keepers

Established elephant keepers with one keeper assuming primary responsibility for their training instruct new elephant keepers. Establishing a new keeper begins with a six-week familiarization process. During this time, one front and opposing back foot restrains the elephant. In this six-week period the trainee is considered a mechanic, not a handler. While the primary trainer runs the elephant through its exercise routines, the new keeper performs tasks such as chaining, bathing and feeding (the trainee does not give the elephants commands at this time). At any time during the training process the trainee may decline to continue for any reason. The trainee will begin working with the most tractable elephant in the herd as determined by the elephant management committee. This process begins with foot and trunk commands given by the trainee with the primary trainer close at hand. As a rapport develops between the elephant and trainee and the trainee establishes control, the level of difficulty of commands increases (i.e. stretching and laying down). Throughout the training process, the elephant management committee meets to evaluate the trainee's progress and discuss safety concerns. As the trainee gains more control of the elephant, the trainer minimizes their handling of the elephant. Once the committee has determined that the trainee has gained full control of this elephant, they are considered established and may move on to the next elephant. The previous steps are repeated until the trainee has established control of the entire cow/calf herd. If problems arise during the training process, the committee will meet to discuss the options available for resolution. If the trainee is unable to safely establish control of any herd member, then the trainee is removed from the elephant program.

Tools

At the present time, the zoo's cow elephants are managed in a free-contact system, and the bulls are managed in a protected-contact environment. Training elephants involves both positive and negative reinforcement. Positive reinforcement is defined as giving a reward following an appropriate response by the elephant. Positive rewards used are verbal praise, petting or food rewards. At Dickerson Park Zoo positive reinforcement is the preferred method of training. An example of negative reinforcement would be the elephant ankus. The ankus is used as a negative reinforcer by applying pressure to specific points on the elephant to cause them to move away from the ankus. An ankus should never have a point sharp enough to damage the elephant's skin. This tool should be used primarily as a guiding and cueing mechanism. It is important for the elephant keepers to know the individual behavior of each elephant and to respond to their actions appropriately. Some elephants only need verbal commands, while others require more physical guidance. In rare cases, elephants with extreme behavioral problems may require the use of ropes to restrain or re-train them. In these instances, the elephant team will meet to discuss the options available prior to any action. As a safety precaution, a cattle prod is held by one or two elephant keepers whenever a bull elephant is in the restraint for close contact procedures such as standing footwork or blood collection.

Elephants

Cows and calves are trained utilizing positive and negative reinforcement. Although the primary means of training involves capturing desired behaviors and rewarding them, some undesirable behaviors may necessitate the use of negative reinforcement. Generally, calves must be taught at an early age that keepers are fragile compared to their other herd members. This often necessitates the use of negative reinforcement such as prodding with the ankus to teach the young elephants to respect the space of keepers .

Bull elephants require positive reinforcement training to acclimate them to the elephant restraint device. This device is utilized whenever the bulls require close contact care, but is used daily to keep them conditioned to entering the restraint.

Under special circumstances Dickerson Park Zoo has accepted elephants with behavioral problems for donation or loans. These elephants are generally younger elephants that have the potential to be re-trained for incorporation into the zoo's breeding program. These elephants generally have specific behavioral problems that jeopardize the safety of other elephants or keepers. Although both types of management systems are currently used at the zoo, the ultimate goal for the past few years has been to move to a total protected-contact system at the earliest opportunity. New facilities will be designed and constructed to make this possible and is estimated to occur by late 2003 or early 2004.

Elephant Behavior Profiles

A behavior profile is maintained for each elephant that contains a history, command list and temperament evaluation. It is important for each keeper to understand the individual behavior of each elephant. It is crucial for the keepers to maintain a high level of consistency in their handling of the elephants.

Minyahk

Public Name – Ole C.C.

Studbook # - 96

Date of Birth – 1949

Acquisition Date – 1951

Birth place – Assam

Transaction History – Assam, Dickerson Park Zoo, Lincoln Park Zoo, Lowry Park Zoo, Dickerson Park Zoo, Oklahoma City Zoo, Dickerson Park Zoo

Chronic or recurring medical problems – She has a recurring crack in back left, center toenail. She has chronic arthritis in her joints. She tends to impact on sand.

Weight – 8900 lbs.

Socialization/behavior history – She is currently the matriarch and accepts new herd members well. She is fair when disciplining herd-mates. She is the most reliable elephant in the herd and is often used as the “auntie” for newborns. She does not like being housed with the bulls. She is slow in responding to commands, partially due to arthritis. She does not accept new keepers easily. She has been known to become seriously aggressive with keepers, but has not shown this behavior for several years.

Commands – trunk up, put it away, open wide, head high, head down, let me see your trunk, salute, bow, kneel, brace, split, foot pad, foot front, change, come here, move over, back up, move up, tail up, break, push, speak, pick It up, get your butt over, get your head over, steady, stretch, lay down (left only) come around, move around, come in line, ear, hand it here, pull (with rope or harness), break it, step up, strings, alright, come up and salute and step over. Keepers can ride on her neck.

Reproduction – She never allowed the bull to breed her when she was younger. She is too old now to begin reproduction.