



April 5, 2002

United States  
Department of  
Agriculture

Animal and Plant  
Health Inspection  
Service

Animal Care  
Western Region

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Michael D. Crocker, Director  
Springfield Dickerson Zoo  
1923 North Weller  
Springfield, MO 65803

Dear Mr. Crocker:

I am forwarding the report of Mr. John Lehnhardt's recent review and assessment of the elephant management program at the Springfield Dickerson Zoo. There are several recommendations which are summarized at the end of the report. Please review the recommendations and let me know if there are any that you believe are not reasonable and/or cannot be completed within the time frames set up in the report. I would appreciate being updated periodically regarding your progress toward implementing the recommendations.

If you have any questions, feel free to contact me at the address or telephone number provided.

Sincerely,

Robert M. Gibbens, DVM  
Director, Western Region  
USDA, APHIS, Animal Care



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# Dickerson Park Zoo Elephant Program Review and Assessment

To: Robert M Gibbens  
Director, Western Region  
USDA, APHIS, Animal Care  
1629 Blue Spruce, Suite 204  
Ft. Collins, CO 80524

Dates of Assessment - January 7-8, 2002

Date of final report submittal: March 29, 2002

Assessment done, report prepared and submitted by:

John Lehnhardt  
7509 Quail Run Ct.  
Orlando, Florida 32819

## Scope of Report

At the request of USDA, APHIS, I was asked to review and assess the elephant management program of the Dickerson Park Zoo (DPZ), in Springfield, Missouri. This review included observance of the daily keeper routines, protocols, personnel, facilities and husbandry and resulted in this report to USDA, APHIS with recommendations for the DPZ elephant management program.

For clarity, a summary of recommendations follows the narrative below. The narrative will give further discussion of the recommendations. Please contact me if there are any areas of the recommendations or narrative that are unclear.

A copy of the Dickerson Park Zoo's current Elephant Management Policy is included with this report.

My curriculum vitae, which is attached to this report as an addendum, will provide my background and experience in elephant management and my qualifications to perform the requested assessment.

I had visited the DPZ only once previously, in 1982.

## Activities during the review

A total of 2 full days were spent (Jan 7, 9am-5pm, and Jan. 8, 8am-4:30pm) shadowing the elephant keepers through their routines, animal shifting, working with the elephants, observing the elephants and the cleaning of the animal enclosures. Personal interviews were held with the following DPZ staff: Director Mike Crocker, General Curator John Collette, Senior Keeper and Elephant Manager Jeff Glazier, and Keepers Melissa Carden, John Bradford, Dave Luedde and Stephanie Luedde. This comprises the entire elephant staff of Dickerson Park Zoo and the senior management.

The weather was rather cold (below freezing at night and barely above freezing during the day) and an ice storm had come through the day before my arrival. Thus I was primarily able to view the elephants and keepers indoors. However, each of the elephants did get brief periods outside during the second day of the visit.

## Overall Comments

I was received very graciously by the DPZ staff in light of the circumstances of my visit, and was given full cooperation, access to the facility, and candid, open discussion during the visit.

As is evidenced by the history of the elephant program in the attached Elephant Management Policy document, DPZ has been a significant contributor to the advancement of Asian elephant reproduction in North America. This is even more remarkable given the size of the institution and the limited resources available to it.

DPZ has received funding to build a new elephant facility and has committed to transitioning to protected contact elephant management when the new facility is completed. This facility is being tracked for completion in late 2003 or early 2004. The project will invest over 1 million dollars in a new barn and yard. Many of the issues and challenges discussed in this assessment regarding facilities will be dealt with by the construction of the new facility. Conversion to protected contact management will address some of the challenges the elephant team faces in the current facilities.

## Facilities

DPZ currently houses eight elephants (3.5) in two facilities, which are not spatially connected. One facility is not open to the public. 2.3 elephants are housed there, the males Onyx and Khun-Chorn, and females Moola, Patience and Dolly. This is a five stall contained cement barn with a hydraulic, rotating elephant restraint device (ERD) and access to three outside iron railing holding yards. The doors are also hydraulically operated. A bollard system allows easy access to the largest stall which is used for working the elephants indoors when the weather is inclement. This barn was built in the 1980's to house the growing elephant population at the park and for primary housing of the bulls with the ERD. The hydraulic rotating ERD at Dickerson Park Zoo is the prototype of this particular device and was developed first at DPZ by current and former members of their staff. This facility, as an off site holding, is basic and functional, and as with most non-public view facilities, does not put pretence into esthetics. It functions reasonably well though there are some shifting challenges with the bulls. A shifting gate and runway connecting the outside three yards would be useful, as it would allow for shifting animals out through the ERD and then around and back in the other side of the barn. Manure removal is done by pushing waste into the center keeper aisle and removing it with a bobcat. The manure is then composted nearby by the keeper staff and used for fertilizer on grounds and in the local park district. There are no serious functional problems with this facility, though it is not adequately heated at present for bathing the elephants comfortably in the coldest winter weather.

The second barn is in the public viewing space and is the original elephant holding space. It is a building which also contains giraffe. 1.2 elephants winter here: females Connie and Minyahk and a young male Haji, who was born at DPZ. The elephant area consists of one large stall and a manually operated access door to an iron railing exhibit yard. There is no ERD in this facility and the keepers enter either through the front bars by the public viewing area or an access door by the keeper workroom. This building is basic and functional, but lack of access to the ERD is a concern, as is separation from the rest of the elephant herd. The animals have to be divided up in winter as neither area has adequate space for the entire group. This can lead to challenges in animal introductions when animals are put back together in the spring. Though functional, this building has esthetic challenges due to its age, condition and construction. The roof insulation is accessible to squirrels and they do significant damage. This is evident to the guests and does not leave the impression of a well care for facility. This can lead to a false perception that the animals are not well cared for. The remainder of the zoo is generally newer construction and in much better condition than the elephant/giraffe building. The planned new elephant facility will remedy this problem.

Just a word about displaying bulls for the public. Currently the two adult males are not visible to the guests. This is a lost opportunity to showcase these magnificent animals. Understandably, there are some safety constraints related to male displays, such as the fact that Khun-Chorn was trained to throw a baseball and can hit a person with a rock at 50 paces. In any cases, creative design should be considered to make this viewing possible.

## Summary of the Elephant Physical Conditions

Onyx - full adult breeding male housed in non-public building. Onyx is one of the most successful breeding Asian male elephants in North America. He was rescued by DPZ from certain euthanasia over 20 years ago when he began to show adult aggressive tendencies toward his previous private owner. He is not managed in free contact and all treatment or contact with him is done when he is in the ERD. I was able to observe Onyx in the outside yard with the female on loan from Denver, Dolly. He appears to be in overall good condition and health. He does have two current health issues. One is a large abscess on his left hip of about a four-month duration. This has been treated regularly but recently he has been refusing to enter the ERD. This sort of abscess is not uncommon in elephants and is by no means life threatening. They look far more impactful than they are. Onyx also has long term chronic foot problems that are constantly being treated through footbaths, foot trimming and antiseptic treatment. There are challenges in getting him into the ERD at times (he would not enter when I was there) for this treatment. The design of the facility doesn't allow for safe treatment or contact with him outside the ERD, as he is a very potentially aggressive animal. It is possible that a structured operant conditioning problem solving process would be able to improve his shifting and treatment of these two issues.

Khun-Chorn – full adult male – has never successfully bred – housed in the non-public barn. Khun-Chorn was viewed both in the ERD and in the outside yard. He is in excellent physical condition and his feet look well cared for.

Patience – adult female – housed in non-public barn – excellent physical condition. Her feet are in good condition. Patience had a long history of aggression toward people in her previous institution and is known to be high strung. Dickerson Park Zoo took her in when no one else would. They have been very successful managing her and she has bred successfully and reared a calf. I observed several keepers working calmly and effectively with her.

Moola – adult female – non-public barn – Moola has a tail abscess from being bitten by one of the other elephants. (This is a very common incident between elephants that are being introduced to each other.) It is being treated regularly (I observed a treatment) and is healing well. She appears to be in excellent health and her feet are in good condition. She has successfully bred and reared a calf. Moola came from another institution as a teenager and has done well at DPZ.

Dolly – adult female – non-public barn. Dolly is on breeding loan from the Denver Zoo on recommendation from the AZA Elephant SSP. She is to be bred with Onyx. Dolly has a small recurring abscess on the right side of her cheek. This is being treated, but as with many elephant skin abscesses, it is slow to resolve. This is partially because she may lie on the abscess when she sleeps. Her feet are in good condition.

Minyahk – older adult female (age 51) – public viewing barn. Minyahk is in excellent condition for her age. She looks much younger than 51 and has been at the zoo since 1954. Minyahk has been to many institutions on loan as well since coming to DPZ and though she has never reproduced, she is an excellent nanny for the calves. Her cuticles have a tendency to grow rapidly and often look as if they need some minor filing. However, minor cuticle overgrowth is not a major health issue and is not a precursor to any serious foot problems. This is not a health or care issue for Minyahk.

Connie – adult female – public view barn. Connie is in excellent condition. She has been at DPZ since 1981 and has bred. Her feet are in excellent condition.

Haji – young male – public view barn. He is a robust healthy young male in excellent condition. His feet are in good shape. No health issues of any kind.

## Foot Care

Previous USDA inspections indicated uncertainty in the appropriate level of foot care being done and documentation of foot care. I saw no evidence of lack of sufficient foot care. The elephants' feet were well cared for and certainly their condition meets the industry standards. The elephant team has an elephant foot care documentation program in place to track foot care activities.

## Keeper Staff

The keeper staff has significant longevity both at the zoo and with the elephant program.

Jeff Glazier – 22 years at DPZ, 22 with elephants

John Bradford – 19 years at DPZ, 19 with elephants, part time now as he is also the animal health technician

Melissa Carden – 18 years at DPZ, 14 with elephants

Dave Luedde – 12 years at DPZ, about 8 with elephants

Steffanie Luedde – 6 years at DPZ, 6 with elephants

The elephant staff is very experienced in free contact management and probably have more years of experience than many other elephant management programs. The staff is loyal to the zoo and to the elephant program. They elephant staff have all received their experience at DPZ and have not been widely exposed to the changes in elephant management occurring throughout North America, particularly the application of structured operant conditioning theory to elephant training both in free and protected contact. The current elephant management program at DPZ has served the zoo and animals well in the past and at present. However, alternative approaches to training effectiveness afforded by a structured operant conditioning program will be very helpful to the elephant staff in managing their elephants in the future. It is imperative that the elephant team begins acquiring this technology as they prepare for the transition to protected contact management.

This is an intelligent and dedicated group of keepers who consistently and unanimously indicated their desire to stay working with elephants and to stay at DPZ. They are all supportive of the current program but are interested in making the transition to protected contact management in the future. Their unanimous concern was that the transition not be mandated to them before they were trained and skilled in protected contacted training and management. This is valid concern. There is a considerable amount to learn and significant operant conditioning skills to develop to effectively use the philosophy and techniques properly for all the animals. It is strongly recommended that DPZ embark on attaining this training as soon as possible. Not only will this allow for sufficient time to hone operant conditioning training skills, but also management of the male elephants will improve with these techniques.

## Elephant Staff Training Plan

There are five basic components of operant conditioning training and application that the DPZ elephant staff will need to become knowledgeable about to effectively implement protected contact management. These components will also enhance the free contact training as well. The components are:

1. Understanding operant conditioning terminology
2. Learning target training and it's application to elephant management
3. Learning stationing of animals through target training and shifting animals from one point to another (A to B training).
4. Learning a structured problem solving format and applying it to current elephant management problems
5. Learning about facilities needs for an effective protective contact elephant management

There are several approaches to take to gaining the necessary expertise in these areas.

For #1, 2 and 3 the elephant staff should read "Don't Shoot the Dog" by Karen Pryor. This is a good place to start learning about operant conditioning. Also, the Senior Elephant Keeper should attend the AZA

Principles of Elephant Management (PEM) Course given annually at Wheeling, W. VA. Jeff Glazier was scheduled to attend this February. It is recommended that additional keepers attend over the next two years. PEM provides a basis for understanding both operant conditioning terminologies as applied to elephant training and handling, and an understanding of protected contact management philosophy.

For #4, PEM provides a problem-solving format. This methodology is also taught at other institutions and it is recommended that the staff seek out opportunities to attend a class on this topic. This can be an incredibly useful process to overcome training blocks and behavioral problems in elephant management.

For #5, keepers should be supported to visit effective protected contact institutions to both see how the philosophy and techniques are applied with the elephants, but also to become educated in the range of facility designs used in protected contact. This experience will be critical for developing and effective design for the new facility and for working with the elephants in the current facility to prepare them for the transition. There is a yearly Protected Contact Elephant Management Workshop given at the North Carolina Zoo by a private consulting company, Active Environments, Inc. This is the only structured training program of it's kind focused on protected contact elephant management. This is worth looking into for one or two of the elephant team.

I do not at this time recommend that a protected contact consultant be contracted to work with DPZ at this time. This may be a step needed farther down the road, but the other experiences recommended should be done first.

Another major area of concern for the elephant keeper staff was the long-term mission of the program. Is DPZ going to be a breeding center in the future or a holding facility? The keeper staff has tremendous calf rearing and training experience that is extremely valuable to the North American elephant community. The keepers want to be able to continue to utilize this expertise in their own zoo. I strongly recommend that DPZ management and elephant staff work with the AZA Elephant SSP/TAG and develop a clear mission for the future of the DPZ elephant program that best utilizes the facility, resources and staff expertise of DPZ for the long term benefit of the zoo and Asian elephants.

A strength of the DPZ elephant program is the cohesiveness of the keepers. They feel that they have a lot of decision making power to manage the program on a day to day basis and that they work for consensus of the group in the best interest of the elephants. This is a great strength, but a clear guiding mission and leadership is needed to keep the program focused and moving in the right direction. Once the mission is established, senior management must guide the program. This is necessary to ensure that the day to day decisions made on the keeper level continue to support the long term or big picture goals.

Finally, under keeper staff, it is important to look at staffing levels. DPZ, by it's own account, has been understaffed for some time. New funding resources appear to be available to remedy this situation. It is recommended that at least one additional elephant keeper position be developed to support the considerable training and planning time that will be needed over the next 2 years in the development of the new facility and the protected contact management system. Protected contact in general takes a somewhat larger keeper force than free contact for effective management.

#### Definition of Elephant Abuse in Relation to Elephant Training and Handling

Effective training is done by sensing the intent of the animal and reinforcing the right behavior at precisely the right moment, and appropriately interrupting the wrong behavior or being certain not to reinforce the wrong behavior. Appropriate interruption of a wrong behavior should be the minimum stimulus necessary to effect the interruption. It is extremely difficult for the inexperienced eye to see what the experienced eye sees in a training session, and what may seem like an unnecessary action from one viewpoint, may in fact be totally appropriate from a trainer's viewpoint. The trainer may be seeing, as an example, a precursor to aggression that the casual or less experienced observer does not see. This is a critical point that must be considered when reviewing potential abuse situations and when developing appropriate definitions and guidelines.

Though, personally, I may agree with a definition of abuse that stated "it is considered abuse to strike an animal except to interrupt aggressive behavior toward a person or another animal", it is not for one individual to determine this standard for the industry. A definition of abuse and descriptions of the proper use of management tools should come from an industry wide discussion which includes the governing body of the Animal Welfare Act (USDA APHIS), the AZA, the EMA and other animal welfare representatives.

### Summary of Recommendations

#### Facilities

1. Construct a new elephant barn and exhibit that supports protected contact management for all the elephants, allows the entire female herd to be together year-round, and allows for public viewing of the males.

Timeline – completion expected by early 2004.

2. Interconnect holding yards of the off-view facility to increase the shifting options for the males in relation to the ERD.

Timeline – could be accomplished in 4-6 months.

#### Elephant Management System Conversion to Protected Contact

1. Convert entire program to protected contact when the new facility is completed. The males are currently essentially in protected contact.

Timeline – approximately 2 years

#### Staffing

1. Increase elephant keeper crew by one to ensure adequate coverage and allow for staff training and new exhibit development time.

Timeline – depends on the availability of operational funding, but it should be a priority.

#### Staff training

1. Understand operant conditioning terminology by staff reading "Don't Shoot the Dog" by Karen Pryor.

Timeline – 2 months

2. Learn target training and its application to elephant management by reading "Don't Shoot the Dog" by Karen Pryor and practicing with the elephants.

Timeline – 2 months

3. Learn stationing of animals through target training and shifting animals from one point to another (A to B training) by reading "Don't Shoot the Dog" by Karen Pryor and practicing with the elephants.

Timeline – 3 months





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27 February 2003

Robert M. Gibbens  
Director, Western Region  
USDA, APHIS, Animal Care  
1629 Blue Spruce, Suite 204  
Ft. Collins, CO 80524

Dear Dr. Gibbens:

This letter is to update you on our progress in implementing recommendations of John Lehnhardt following his earlier assessment of our elephant program.

Our elephant staff have read the recommended materials and familiarized themselves with the principles of target training and operant conditioning in preparation for a move to protected contact as a primary management system for our elephants.

Our elephant manager has attended the AZA Principles of Elephant Management course. We were unable to send anyone in 2003 but expect to send additional keepers in early 2004.

Construction of a new cow elephant barn and public exhibit yard is expected to begin in early March of this year, with completion in Spring of 2004. Those facilities will be located adjacent to the existing male elephant barn and three outside yards and will be connected to them, so elephants can be shifted between the two facilities as needed. All female elephants and any offspring would then be housed together, with the exception of those intervals when females might be placed with males for breeding at the appropriate times.

Our existing bull facility is designed to house three bulls in five stalls and three outside yards. We currently have two adult bulls. The new cow barn is designed to accommodate six adult animals. We presently have four. The new exhibit yard is about three times the size of our current display, and it will exhibit the females with offspring. A separate smaller exhibit for males is designed but will not be built at this time due to financial constraints and the fact that both males are rock throwers and cannot, therefore, be displayed near the public. The dominant breeder male that we had at the

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time the evaluation was done, who was not a "thrower," died in the summer of 2002. We currently expect to add that second display yard later but do not anticipate that either of these two males can be displayed to the public in it.

As part of learning target training and operant conditioning, which was also critical to the process of designing the new elephant facilities, our staff visited zoos in St. Louis, Kansas City, Tulsa, Atlanta and Disney's Animal Kingdom

We continue to participate in Asian elephant conservation through the AZA Elephant SSP/TAG and follow their recommendations.

Sincerely,

A handwritten signature in cursive script that reads "Mike".

Mike Crocker  
Zoo Superintendent