

Abilene Zoo

AZA correspondence

27 pages follow

Note from Suzanne:

Be sure to read

"Elephant observation notes
Nov. 1 2004" at end of
this doc.

This is a bad situation.



AMERICAN ZOO AND
AQUARIUM ASSOCIATION

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Date: 29 April 2003
To: AZA Institution Directors and Other Interested Parties
From: Mark C. Reed, AZA President
Subject: Elephant Summary Paper and Board Action

I am pleased to enclose two important documents related to the management and welfare of elephants in AZA institutions.

The first document is a summary of comments and information regarding recent discussions on elephant management in AZA institutions. A similar report was used by the AZA Board to facilitate discussions and deliberations at its recent March meeting in Columbia, SC. I believe it will be helpful to anyone interested in elephant management, and I particularly thank Immediate Past President John Lewis for his leadership in compiling, preparing and presenting this summary.

The second document is a resolution, adopted by the AZA Board on April 25, 2003, where the Board took several actions to reinforce the current AZA elephant standards. The Board believes its actions will further enhance staff and public safety, as well as the welfare of elephants in our care.

On behalf of the AZA Board, I thank all of you who have commented and expressed interest in this important matter.



Elephants & Elephant Management

By: John Lewis, Immediate Past President

March 2003

The following represents a compilation of comments and information surrounding the recent discussions on elephant management in AZA Institutions. A similar report was used by the AZA Board to facilitate discussions and deliberations at its recent March meeting in Columbia, SC. In particular the following information is aimed at the issues surrounding the type of management used in AZA Institutions, i.e. "Free Contact", "Protected Contact" and all the reported variations as they relate to the safe and humane management of elephants.

I. **Current Standards**

There are two AZA Policies that have direct application to the discussions at hand. On March 21, 2000 the AZA Board issued the "AZA Policies On Elephants". In it criteria were laid out detailing what AZA Institutions should strive toward in their elephant programs. It signaled that standards for elephant care and management would be updated and become a part of the Accreditation process. Also, AZA Institutions were strongly encouraged to discontinue elephant rides and to send all elephant program managers to the Principles of Elephant Management (PEM) Course at the AZA Schools for Zoo and Aquarium Personnel. The only "must" in the policy concerned elephant importation where it was then required that all elephant imports must be approved by the AZA Elephant SSP. It was in this policy statement as well that the Elephant SSP evolved into the AZA Elephant SSP/TAG.

Furthermore, the following statement in Section IV (7) regarding management type was part of the 2000 Elephant Policy. "AZA will not require that members adopt a particular management philosophy, but will encourage empirical evaluation and develop performance guidelines for both protected and free contact management systems. The AZA recognizes the recent trend toward protected contact management, and encourages members to evaluate protected contact or any approach to management that both minimizes the risk to keepers and provides for the physical and psychological well-being of elephants in zoos."

The Board adopted the "AZA Standards for Elephant Management and Care" (a.k.a. Standards) on March 21, 2001. The Standards became part of the Accreditation procedures in May 2002 with written plans for compliance with space, enclosure and ERD requirements due by 1 May 2004 and full compliance with these by 1 May 2006. Temporary variances can also be applied for on group size requirements with SSP/TAG verification. This time the Standards included several "musts" required of members to keep their accreditation.

While no particular management style was required in the Standards several limits were set on the types of tools or actions members could use. Electric prods or collars were prohibited in routine training, excessive striking, prodding and force were prohibited in a variety of statements as well as withholding food, water or veterinary care. (Sec.5.1.2.a-g)

use PC only or be able to use whatever management practice works best and safest in their institutions. In other words mandated PC vs. no mandate. The following table shows the relative numbers for each position as compiled from letters and e-mails received and comments made at the Directors' Retreat. Please note that written communications from AZA institutions with multiple signatures were counted as the related multiple. ex. A letter with three signatures supporting FC was counted as three responses to provide parity with those institutions where each respondent sent a separate letter. Letters from groups like EMA, Kane/Forthman, Elephant SSP/TAG, etc., were only counted once regardless of the number of signatures or the number of times they stated their position.

Table 1. Quantified Positions on PC vs. FC

	All Comments	From AZA Institutions	CEOs	W/Elephants	Other**
Mandate PC	15 (23%)	13 (23%)	10 (23%)	12 (25%)	2 (29%)
Evolve to PC*	8 (13%)	7 (12%)	5 (11%)	6 (13%)	1 (14%)
No PC Mandate	34 (53%)	30 (53%)	22 (50%)	26 (54%)	4 (57%)
No Position	7 (11%)	7 (12%)	7 (16%)	4 (8%)	0 (0%)
Total	64 (100%)	57 (100%)	44 (100%)	48 (100%)	7 (100%)

* Recommended movement or evolution to PC but not necessarily mandated.

** Includes Kane, Elephant TAG/SSP, EMA, PEM & other non-Institution comments.

In addition to positions on management, I think it is important to note how we are currently managing elephants in our institutions. According to the Elephant SSP/TAG as of EOY 2002 there are:

- 9 males and 117 females managed exclusively in Free Contact.
- 29 males and 121 females managed exclusively in Protected Contact.
- 0 males and 9 females managed in both methods.
- Currently 285 (38.247.0) elephants reside in AZA Facilities.

III. Other Positions

The initial paper from Kane and Forthman recommended changes to the Standards in two particular areas. Those are the requirements for minimum herd size and the use of FC management. Their argument asserts that the insufficient size and stability of elephant groups in AZA facilities and the use of FC are responsible for shortened life spans and low fecundity of elephants in AZA facilities. They further argue that the risk to keepers practicing FC is unacceptable and unethical.

Several respondents to their paper disagreed with their assumptions and identified specific misinformation in their paper. Robert Wiese challenged their assumptions on life span that were based on his and Deborah Olson's previous papers addressing demographics in elephants at AZA facilities. He said the data was not intended to reflect life spans but to reflect point-in-time (my phrase) status of the populations. Assertions that FC may be part of the problem with fecundity were challenged by several who point out that all viable elephant births so far have been in FC facilities. Assertions that FC is inhumane and therefore unethical had supporters and opponents. Supporters hold that FC depends on keeper dominance and the threat and/or use of physical punishment that may lead to abuse.

a mandate, such a statement moves the bar and suddenly "experts" appear to support one system over another. This will shift a greater burden of potential liability on our member facilities practicing FC and probably function as a mandate, not unlike what happened in 2000 in the AZA Policies On Elephants where facilities were strongly encouraged to discontinue elephant rides. They did. All of them.

Finally, it has not yet been one full year during which AZA Facilities holding elephants are accountable to the Standards through Accreditation. Is that sufficient time to determine whether we have made any progress in elephant care and management? Also one may wonder if the Accreditation process is the best way to monitor something as important as the Standards. For instance, if a zoo was accredited in March of 2002, before the May 2002 implementation of the Standards through Accreditation, that institution could- barring a major incident- not be fully accountable to the Standards for just over four years, and every four plus years after that. There is no mechanism in our current systems to check in a timely manner on the "musts" that are listed in the Standards. This was amplified by several respondents who stated their frustration that some institutions are not following the standards and that the AZA is not monitoring or evaluating the Standards addressed this issue.

All of the above, and AZA Staff reports, along with all of the comments and letters submitted in late 2002 and early 2003 were used by the AZA Board to debate and update the Association's position on elephant management in 2003. On behalf of the AZA Board of Directors I extend my heartfelt thanks to everyone that took the time and energy to contribute to this important discussion.

AZA Board of Directors Resolution
Elephant Standards
Adopted 25 March 2003

In response to the concerns of the membership, the AZA Board of Directors (BOD) considered members' comments and input and revisited the current standards for elephant management and care. The current standards were approved by the BOD in 2001 and incorporated into the Accreditation process in 2002. The BOD supports the existing standards which state that AZA standards for elephant management recognize that a diversity of approaches exist, but encourage members to strive to achieve the goal of maximizing elephant health and reproduction and minimizing risk of injury to staff. The Board of Directors has taken several actions to reinforce these standards.

- The BOD instructs the Accreditation Commission to immediately require annual written verification from AZA member institutions holding elephants, certifying that they are meeting the required standards (as listed in Attachment A).
- The BOD believes wholeheartedly in continuous professional development and training for elephant staff and therefore is now *requiring* that all elephant program managers attend the Principles of Elephant Management (PEM) course. Elephant program managers will be given priority admission to PEM.
- The BOD directs the Board of Regents to develop a mechanism for the PEM graduates to remain current in best practices in elephant management.
- The BOD instructs the Board of Regents to hold best practices workshops on elephant management systems and transitioning from one management system to another.
- In the interest of public safety, AZA strongly discourages visitor-elephant interactions, outside of the primary enclosure. AZA strongly discourages the practice of walking elephants in public areas during public hours.

The AZA believes that these steps will further enhance the safety of our public and our staff and animal welfare for the elephants in our care. The AZA encourages the continued evolution of elephant management practices.



July 18, 2002

Jeff Bullock
Abilene Zoological Gardens
PO Box 60
Abilene, TX 79604

AMERICAN ZOO AND
AQUARIUM ASSOCIATION

Committee
Chairman/Advisor

Dear Jeff Bullock:

I am writing to you because I believe it is important for you to be informed about the need for hormone monitoring for elephants. The enclosed article, "Importance of hormone monitoring for assessing reproductive status, identifying and treating reproductive problems, and improving breeding success," outlines the importance of this effort. A second enclosure, "Blood and urine sample collection protocols for monitoring reproductive activity in elephants," describes protocols for collecting and preparing samples from elephants. The Elephant TAG/SSP feels this effort is critical in our ability to better understand the full reproductive profile for the life of our elephants. Additionally, the information we obtain from hormone monitoring provides the Elephant TAG/SSP with a useful tool in making recommendations for the ultimate goal of developing self-sustaining North America populations of both African and Asian elephants.

The Elephant TAG/SSP Steering Committee believes there has been misinformation regarding both the methods of collection and sampling as well as the costs associated with running the samples. The enclosed information addresses these areas in hopes that facilities holding elephants will realize that our request for hormone monitoring is within their ability and budget. There is also information about resources that are available for those who may need some assistance.

The Elephant TAG/SSP is fortunate to have committed scientific advisors such as Dr. Dennis Schmitt and Dr. Janine Brown who have invested considerable time working with the mysteries of elephant reproductive biology. Your efforts can help them continue to solve these mysteries so that we can be even more efficient and effective with our captive management strategies.

After reviewing this information, please pass it on to your staff. If you have any questions, please feel free to contact me or any other Steering Committee member. Thank you for assisting the Elephant TAG/SSP with this important effort.

Sincerely,

Mike Keele
Chair - Elephant TAG/SSP

Enclosures: 2



Importance of hormone monitoring for assessing reproductive status, identifying and treating reproductive problems, and improving breeding success.

Prepared by Elephant TAG/SSP Reproductive Advisors
Janine L. Brown, Ph.D. and Dennis L. Schmitt, D.V.M., Ph.D.

Jessie Cohen, NZP



All zoos holding elephants need to begin an active program of reproductive monitoring through routine hormone assessments of both males and females to ensure the continued survival of captive elephants. The Elephant TAG/SSP recommends long-term hormone monitoring as a critical tool for captive management and care of elephants in North American Zoos. In this regard every elephant is important regardless of whether there are plans for breeding or not. We have only a limited number of elephants to work with, so all need to be studied so that we can learn as much as possible about this valuable resource.

The preferred hormone evaluation method is an analysis of progestogens (females) or testosterone (males) in blood samples collected from an ear or leg vein on a weekly or bi-weekly basis. However, if blood sampling is not immediately possible, then weekly urine samples should be collected for similar hormonal assessments.

The importance of collecting these biomaterials (blood even more so than urine) cannot be overstated. In addition to evaluating reproductive fitness, banked products provide material that can be used prospectively as well as retrospectively to monitor the general health of the captive population, including conducting nutritional analyses and assessing disease status. The routine collection of blood or urine should not be considered an option, done only if time and money permits. Rather it needs to be an integral part of the total management system throughout the elephant's lifespan, as important as proper nutrition and veterinary care.

One reason these analyses are so critical is that the captive population is not self-sustaining. Within 20-30 years African and Asian elephant populations will become 'demographically non-viable' because most females will be too old to reproduce. The only way to reverse this trend is to increase birth rates several-fold beginning now. That effort will require knowing which females are reproductively fit. In fact, the Elephant TAG/SSP will only endorse breeding recommendations after hormonal assessments have been conducted.

Even if there are no immediate plans for breeding, or females are considered post-reproductive, we still need this information to help us understand the reproductive biology of elephants. As an example, a major problem recently discovered is that many elephant females of reproductive age are not cycling normally (termed 'flatliners'). Continued hormonal analyses are needed to determine the extent of this problem in the captive population, understand if the condition is permanent or temporary, identify possible causes and assess the efficacy of proposed treatments. If it turns out the number of flatliners is relatively high, or the problem is growing, then the chance of a population crash becomes even more imminent.

It is not only important to assess endocrine function in females; hormone monitoring of bull elephants is equally important. We need to understand why many captive bulls exhibit reproductive problems like poor sperm production and lack of sexual interest (i.e., libido). We also need to understand the function and control of musth. Long-term assessments of testicular function through blood or urinary hormone analyses will allow us to identify better ways to manage bulls as more male calves are born and more institutions make the commitment to maintain bulls.

Lastly, to take advantage of the latest technologies for maximizing reproductive success, like artificial insemination, the ability to monitor hormones is absolutely essential. The double luteinizing hormone (LH) surge measured in blood now is used routinely to time inseminations, as well as natural breedings. After conception, pregnancy can be diagnosed and critically monitored using serum or urinary progesterone or blood prolactin analyses. And when collected daily, the drop in serum progesterone at the end of gestation can be used to reliably predict parturition that should occur 2-3 days later.

Hormonal analyses are not expensive; it costs only about \$300 per elephant per year (for weekly blood or urine). If funding is a problem, the International Elephant Foundation will consider providing assistance to those zoos that demonstrate financial hardship and that lack of money is the main reason hormone monitoring is not being conducted.

Please help us do a better job of monitoring and managing captive elephants.

For more information about how to establish a routine hormone monitoring program, contact your TAG/SSP institutional representative or the Reproductive Advisors (Dr. Janine Brown: phone, 540-635-6586; fax, 540-635-6506; e-mail, jbrown@crc.si.edu; Dr. Dennis Schmitt: phone, 417-836-5091; fax, 417-836-6979; email, dennisschmitt@smsu.edu).

BLOOD AND URINE SAMPLE COLLECTION PROTOCOLS FOR MONITORING REPRODUCTIVE ACTIVITY IN ELEPHANTS

Janine L. Brown, Ph.D.
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Gonadal function (i.e., ovarian and testicular activity) can be assessed in elephants using either blood serum/plasma or urinary steroid analyses. Testing for other hormones, like LH or prolactin, can only be done using blood serum/plasma.

SERUM COLLECTION PROTOCOL

1. Blood samples should be collected once weekly for a minimum of one year to establish if females are cycling. Weekly to monthly samples should be collected indefinitely from bulls to assess testicular activity. **Note:** the Elephant SSP recommends that elephants be reproductively monitored continually so blood should be collected indefinitely for analysis (or banked for future analysis).
2. Collect blood into a 7- or 10-ml red top vacutainer or serum separator tube. Allow blood to clot for 1-2 hours at room temperature, or for 2-4 hours at refrigerator temperature. Avoid exposing blood to ambient temperature for longer than 3 hours. Plasma (collected in either EDTA or heparinized tubes) can also be analyzed, although serum is preferred.
3. Centrifuge blood (~1000 x g for 10-15 min) and decant serum into a polypropylene vial with a tight-fitting cap that pushes or screws on and is flush with the tube (i.e., lip of cap does not hang over the side of the tube). Recommended tube: round bottom (12 x 75 mm) with a frosted writing space and push caps from the Sarstedt company. Information on the tube should include: animal name or number, date (mo/day/year), and facility name or abbreviation. Provide a minimum 1 ml of serum for each sample. Do not overfill vials; allow room for expansion during freezing. Store frozen (-20°C or colder).
4. Ship samples in a styrofoam container with dry ice (preferred) or freezer packs (okay during cool months). Use an overnight express courier. Avoid shipping samples after Wednesdays.
5. Include in the shipment a written request as to what hormone analyses are required.
6. Contact institutional representative for where to send samples for analysis.

URINE COLLECTION PROTOCOL

1. Urine samples should be collected once weekly for progesterone analysis for a minimum of one year to establish if females are cycling. Weekly to monthly samples should be collected indefinitely from bulls to assess testicular activity. **Note:** the Elephant SSP recommends that

elephants be reproductively monitored continually so urine should be collected indefinitely for analysis (or banked for future analysis).

2. Urine samples can be collected "free-catch" (i.e., mid-stream) using a cup or other container (metal or plastic), or aspirated off the ground using a syringe or similar device. For urine collected off the ground, moderate contamination with water generally is not a problem because samples are indexed to creatinine concentration. It is recommended that concrete floors be as dry as possible, however, to prevent over-dilution. If animals are separated at any time, urine can be collected from cups placed in the enclosure drain. Dirt contamination is not a problem, but it would be helpful if all samples were centrifuged (~1000 x g for 15 min) to remove dirt and other cellular contaminants before freezing.
3. Place urine into a polypropylene vial with a tight-fitting cap that pushes or screws on and is flush with the tube (i.e., lip of cap does not hang over the side of the tube). Recommended tube: round bottom (12 x 75 mm) with a frosted writing space and push caps from the Sarstedt company. Information on the tube should include: animal name or number, date (mo/day/year), and facility name or abbreviation. Provide a minimum of 4.5 ml of urine for each sample. Do not overfill vials; allow room for expansion during freezing. Store frozen (-20°C or colder).
4. Ship samples in a styrofoam container with dry ice (preferred) or freezer packs (okay during winter months). Use an overnight express courier. Avoid shipping samples after Wednesdays.
5. Include in the shipment a written request as to what hormone analyses are required.
6. Contact institutional representative for where to send samples for analysis.



June 9, 2003

To: AZA Institution Directors

From: Mark C. Reed, AZA President

Subject: Revised Standards for Elephant Management and Care
Consolidation of existing documents

AMERICAN ZOO AND
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The attached document entitled "Standards for Elephant Management and Care" consolidates all the standards and policies for elephants adopted by the Board of Directors (March 2000, March 2001, and March 2003) into one document. This document replaces all other documents referencing elephant standards and/or policies.

For convenience, we have highlighted the sections of the document that are recommendations, not requirements, and also the sections for which variances from the standard may be obtained. The remaining sections of the document, those that are not highlighted, are the requirements for those AZA institutions holding elephants.

**AZA STANDARDS FOR ELEPHANT
MANAGEMENT AND CARE
Adopted 21 March 2001**

The following standards apply to the husbandry and management of both African (*Loxodonta africana*) and Asian (*Elephas maximus*) elephants in AZA accredited institutions, AZA related facilities, and non-member participants in the AZA Elephant Species Survival Plan (SSP). The intelligence, strength, and social needs of these magnificent animals can pose many challenges for captive managers. Institutions desiring to hold elephants should therefore understand the substantial human, financial, and ethical commitments involved in appropriately maintaining these large and potentially dangerous species (Hutchins and Smith 1999). These standards have been developed to guide institutions that are planning and improving their elephant programs and are considered during the AZA accreditation process and non-member SSP participant evaluation.

The AZA Board of Directors believes that the Association performs a valuable role in the cooperative development of standards for zoo and aquarium animal management and care, which are designed to advance the collective mission of AZA and its members. The development of these standards and the adoption of them through the AZA accreditation process is what sets AZA members apart from roadside animal attractions. The Board understands that there will be differences of opinion as to what constitutes appropriate standards. Standards evolve over time reflecting changes in knowledge, expertise, and public perception.

The AZA Board of Directors has asked the AZA Elephant SSP/TAG to begin formulating a draft vision for the future of elephant management in AZA accredited zoos. Because current standards are expected to change over time, it is recommended that members seeking to plan new elephant exhibits/care programs look to the vision, rather than the current standards, for guidance on where to go in the future.

Compliance with some minimum housing (specifically space, enclosure design, and elephant restraint device (ERD) requirements) must be implemented no later than five years from the issuance of these standards (1 May 2006). Institutions must have written implementation plans for compliance with these standards no later than three years from their issuance (1 May 2004). AZA accredited and related facilities must meet all other provisions described here within one year (1 May 2002) of the issuance of these standards, unless the Accreditation Commission approves a variance. Failure to meet basic AZA standards for elephant management and care will be noted during accreditation inspections. Current non-member participants in the SSP will be given the same time schedule for compliance, but new non-member participants must meet all new standards prior to approval.

1. Abiotic Environmental Variables

1.1. Temperature

- 1.1.1. Elephants must be kept outside on natural substrates as much as possible. Institutions should consider designing exhibits that allow elephants outdoor access twenty-four hours a day – weather, health, and safety permitting. During daylight hours, elephants kept outdoors can tolerate moderate temperature extremes. Provisions must be made to protect animals from adverse weather, including intense sunlight, chilling rain, sleet, etc. Animals kept outdoors must be monitored frequently at temperatures below 40 degrees F (4.4 degrees C). Facilities may install outdoor heat sources to extend the amount of time the animals are able to remain outside.
- 1.1.2. While outdoors, all elephants must have access to shade during daylight hours in temperatures above 80 degrees F (27 degrees C) and when they are exposed to direct sunlight.
- 1.1.3. Indoor holding areas must be ventilated, and heated to a minimum temperature of at least 55 degrees F (12.8 degrees C) at all times of the year. One room must be capable of maintaining a temperature of at least 70 degrees F (21.1 degrees C) and be free of drafts, for accommodating sick or debilitated animals.

1.2. **Humidity** – There are no standards for humidity at this time. Information is limited, but this does not seem to be of major concern for elephant management.

1.3. Illumination

- 1.3.1. Natural daylight cycles are adequate for elephants, even in temperate regions. Indoor areas must be well illuminated during daylight hours, followed by a period of darkness. Fluorescent lighting provides a sufficient spectrum of illumination; skylights, in addition to interior lighting, are highly recommended. Ample interior lighting must be available, as it is especially important to maintain staff safety.

1.4. Space

- 1.4.1. Indoor space must provide adequate room for animals to move about and lie down without restriction. A minimum of 400 sq. ft (37.2 sq. m) is required for a single animal, approximately 800 sq. ft (74.3 sq. m) for two animals, and so on (AZA 1997). Because of their size and space requirements, bulls or cows with calves must have a minimum of at least 600 sq. ft (55.7 sq. m) (AZA 1997).
- 1.4.2. Outdoor yards must have at least 1,800 sq. ft (167.2 sq. m) for a single adult individual and an additional 900 sq. ft (83.6 sq. m) must be added for each additional animal (AZA 1997). If this space is the only location for exercise, then it is recommended that the space per elephant should be even greater.

**** Note:** Institutions can petition for a variance from the current minimum indoor or outdoor space standards. The applicant must explain why their facilities are adequate, even though they do not meet the minimum size standard. Accreditation inspectors will take a holistic approach to accreditation inspections, rather than focusing on specific size measurements. Context is particularly important. For example, it may not be a problem that the indoor space requirements are under the standard by a small amount if a zoo is located in a warmer climate and the animals

are outside most of the time. If, however, the zoo is located in a cooler climate and the animals are kept inside for many months during the winter, then the indoor space requirements must be met or, preferably, exceeded. Environmental enrichment programs should also be taken into consideration when evaluating space available.

- 1.4.3. Mature animals can reach a vertical height of 20 ft (6.1 m). Consideration of this must be given with regard to ceiling heights and fixtures (e.g., lights, heating units, plumbing, etc.) so that animals do not harm themselves or the facility.
- 1.4.4. All facilities must have the ability to separate and isolate animals to address behavioral concerns or allow veterinary procedures to occur (EMA 1999).
- 1.4.5. Outdoor yard surfaces must consist primarily of natural substrates (e.g., soil, sand, grass) that provide good drainage and have a cleanable, dry area for feeding (EMA 1999).
- 1.4.6. While outdoors, elephants must have access to sand or soil at all times for dust bathing (EMA 1999).
- 1.4.7. Rocks, tree stumps, or large sturdy objects must be provided in the exhibit so that the animals may use them for rubbing and scratching.
- 1.4.8. Elephant containment barriers must be in good condition and able to prevent elephant escapes. A wide variety of building materials can be used as long as they are able to withstand the animals' strength, contain the elephant in a specific space, and prohibit direct contact between elephants and the public.
- 1.4.9. Door and gate design is extremely important to ensure the safety of both elephants and keeper staff. Both doors and gates must be engineered to withstand extreme force. If mechanical opening devices, such as hydraulic or electrically powered drives are used, they must be able to be operated manually or with a backup generator in the case of a power failure.
- 1.4.10. Enclosures must be cleaned of excrement daily. Frequent daily manure removal is recommended and may be necessary for the maintenance of both sanitary and esthetic conditions (EMA 1999).
- 1.4.11. If the AZA Elephant SSP-managed population is to become sustainable, it is necessary to create housing for many more adult males (Wiese 2000, Wiese and Olson 2000). All institutions considering new construction for elephants should include holding space for adult males. Institutions modifying existing facilities should also make provisions for bull housing.
- 1.4.12. There are no standards on the visual, acoustic, and olfactory needs of elephants at this time.
- 1.4.13. There are no specific standards for the transportation of elephants at this time, but see Fowler (1995).

1.5. Water and Moats

- 1.5.1. While outdoors and weather permitting, elephants must have regular access to a water source, such as a pool, waterfall, misters/sprinklers, or wallow that provides enrichment and allows the animals to cool and/or bathe themselves.
- 1.5.2. Standing water in indoor floor areas can cause foot problems and become a breeding ground for bacteria. Floors must therefore be impervious to water, quick to dry, and sloped to a drain. Floor surfaces must be relatively smooth, but not

enough so that they become slippery when wet. Conversely, very rough surfaces may cause excessive wear or irritate footpads.

- 1.5.3. Dry moats can pose a substantial threat to elephants and their use must be limited with the ultimate goal that they are eventually phased out. Moats that are deep, narrow-sided, and hard-bottomed can be particularly dangerous. Although there should be no risk of animals falling or being pushed into the moat, written animal extraction protocols must be in place for any moat that is more than 3 ft (1 m) deep, less than 10 ft (3 m) wide, and/or hard-bottomed.

2. Biotic Variables

2.1. Food and Water

- 2.1.1. Elephants must have access to clean, fresh drinking water (EMA 1999). When water containers are used, drinking water must be cleaned and refreshed at least twice a day. Containers must also be cleaned daily.
- 2.1.2. Fresh browse and produce should be used as dietary supplements and enrichment for the animals.

2.2. Group Composition

- 2.2.1. The minimum age offspring must remain with their mothers is three years. Some flexibility is necessary in cases of maternal rejection and when infants cannot be reestablished in their social group.
- 2.2.2. Institutions must have the ability to manage social compatibility as well as dominance and aggression among an elephant group (EMA 1999).
- 2.2.3. Institutions must have the ability to manage introductions and separations of a new female to a herd and, if the institution is a breeding facility, females to males for breeding, newborn calf to its mother, and calf and mother to the herd.
- 2.2.4. Institutions must provide an opportunity for each elephant to exercise and interact socially with other elephants (Taylor and Poole 1998, EMA 1999).
- 2.2.5. Adult males (six years and above) may be housed alone, but not in complete isolation (opportunities for tactile, olfactory, visual, and/or auditory interaction with other elephants must be provided) (Rasmussen et al. 1982).
- 2.2.6. A behavioral profile must be maintained for each individual elephant and updated annually.
- 2.2.7. All holding institutions must have a written environmental enrichment plan for their elephants and show evidence of implementation (Shepherdson et al. 1998, EMA, 1999, Shepherdson 1999).
- 2.2.8. Staff must be aware of each animal's social compatibility and the dominance hierarchies of the herd (EMA 1999).

2.3. Group Size

- 2.3.1. Zoos should make every effort to maintain elephants in social groupings. It is inappropriate to keep highly social female elephants singly (see Sukumar 1992, Taylor and Poole 1998, EMA 1999). Institutions should strive to hold no less than three female elephants wherever possible. All new exhibits and major renovations must have the capacity to hold three or more female elephants.

****Note:** It is understood that obtaining additional elephants for zoo exhibits can be difficult at this time. Temporary variances will therefore be considered regarding group size requirements. Institutions that do not currently meet the group size standard should demonstrate that they have requested assistance from the SSP in obtaining additional animals.

It is recognized that some socially aberrant adult females currently exist and these elephants can be managed singly if the institution has made every effort to introduce them to a social group and the SSP agrees that the anti-social behavior is not correctable.

2.4. Human-animal Interactions – A minimum of two qualified elephant keepers must be present during any contact with elephants. A qualified keeper is a person the institution acknowledges as a trained, responsible individual, capable of and specifically experienced in the training and care of elephants.

2.5. Introductions – There are no specific standards for elephant introductions at this time, but see Lindburg and Robinson (1986) and Krantz (1996).

3. **Health and Nutrition**

3.1. Diet

3.1.1. High quality and nutritionally correct food must be provided in sufficient quantities to maintain animal health and appropriate weight (EMA 1999). Hay and grain should be formulated to provide a complete diet as recommended by the Elephant SSP Nutrition Advisor.

3.1.2. There are no specific standards for elephant nutrition at this time, but see Dierenfeld (1995), Oftedahl et al. (1996) and Ullrey et al (1997).

3.2. Medical Management

3.2.1. A veterinarian with experience in large mammal medicine must be on call at all times to deal with routine elephant health evaluation and treatment and medical emergencies.

3.2.2. Each elephant must be given a thorough annual physical examination (Mikota et al. 1994).

3.2.3. All elephants must be visually inspected on a daily basis (EMA 1999). A general assessment must be made and any unusual activities should be recorded in the daily log at each inspection. Specifically, reports should include observations such as condition of urine and feces, eating and drinking patterns, administration of medications (if any), and general condition and behavior.

3.2.4. A veterinarian or trained veterinary technician must perform fecal examinations to look for parasites and other problems at least twice a year (Samuel et al. 2001). Results should be recorded.

3.2.5. All elephants must be trained to permit a complete body daily exam (include feet, eyes, ears, open mouth and tongue, teeth, and tusks) for any sign of abnormalities. Results should be recorded.

3.2.6. All elephants' body weight must be assessed and recorded at least twice a year (EMA 1999) through actual weighing or through the use of standardized body

- measurement tables, photographs, or similar, previously validated techniques (e.g., Nirmalan and Sreekumar 1990).
- 3.2.7. For management purposes, all elephants must be trained to accept injections, oral medications, insertion of ear or leg vein catheters, treatment of wounds, enemas, and urogenital examinations (Mikota et al. 1994, EMA 1999).
 - 3.2.8. All elephants must be trained to accept regular collection of blood, urine, feces, saliva, semen, skin biopsy, and temporal gland secretion (Brown 1998, EMA 1999). Biological specimens should be stored according to the SSP Veterinary Advisor's guidelines on biomaterials collection.
 - 3.2.9. All elephants' skin must be thoroughly inspected on a daily basis and cared for as needed through bathing, removal of dead skin, and treatment of dry skin or other skin problems (Mikota et al. 1994, EMA 1999).
 - 3.2.10. Each elephant facility must have a written protocol for routine foot care and show evidence of its implementation (Mikota et al. 1994, Csuti et al. 2001). This protocol must include daily cleaning and inspection of each elephant's feet.
 - 3.2.11. Baseline foot radiographs or thermographs of all adult elephants must be taken and kept on file. In some facilities, it may be appropriate to annually monitor selected elephants (i.e., those that have a history of chronic foot problems) (Csuti et al. 2001).
 - 3.2.12. A written daily exercise program for each individual animal must be designed and followed (Taylor and Poole 1998). The program should be developed in consultation with the elephant manager, elephant handlers, and the staff veterinarian(s).
 - 3.2.13. When forming new herds, Asian and African elephants should not be placed together in the same enclosure. Herpes viruses endemic to one species can be fatal in the other (Richman et al. 1996, 1999). In addition, there is concern that behavioral differences between the two species may lead to problems with dominance and aggression (Hutchins and Smith 1999).
 - 3.2.14. Institutions must adhere to USDA APHIS requirements for testing and treatment of tuberculosis (USDA APHIS 2000, Mikota et al. 2000).

4. Reproduction

- 4.1. Each male and female elephant of reproductive age (8 to 35 years) must have an initial reproductive assessment and follow-up assessments on a regular basis by transrectal ultrasound to verify reproductive status and assess overall reproductive health (Hermes et al. 2000, Hildebrandt et al. 2000 a,b). Exceptions include elephants with known reproductive problems, actively breeding animals, or those with documented medical/behavioral conditions that preclude them from breeding.
- 4.2 Each male and female elephant of reproductive age (8 to 35 years) must have hormone (progesterone or testosterone) values assessed through weekly (or bi-weekly) collection of blood samples (Brown 1998, 2000). Exceptions are elephants with known reproductive problems or those with documented medical/behavioral conditions that preclude them from breeding.

5. Behavior management

5.1. Training

- 5.1.1. Electrical devices designed for use on livestock, such as commercially manufactured electric prods and shocking collars/belts, are prohibited as routine training tools or for handling animals during exhibition. Electric prods are permissible only as an emergency safety device; however, their use is restricted to situations in which keepers feel the imminent need to defend themselves against elephant attacks, or to protect an elephant from possible injury (see Schanberger et al. 2001).
- 5.1.2. Elephant training terminology and descriptions of specific behaviors are outlined in the *AZA Schools for Zoo and Aquarium Personnel Principles of Elephant Management (PEM) Course Notebook* (AZA Board of Regent's 2001). Trained behaviors should allow the elephant staff access to the animal in order to accomplish all necessary animal care and management procedures and permit inter-institutional consistency. The PEM-recommended list of commands and their corresponding behaviors are ones that every elephant and elephant keeper must know so that basic husbandry and veterinary practices can be accomplished. Behaviors should be reinforced so that all elephants attain close to 100% compliance upon request of the elephant staff (Sevenich et al. 1998).

Appropriate elephant training may employ several training aids or "tools" (see PEM Course notebook for a list and description of some elephant training tools and procedures). The goal of a good trainer is to be able to reduce the amount of time any particular training aid is used (Roocroft and Zoll 1994).

The AZA considers the following training tools/techniques to be inappropriate for use at member institutions:

- a. Insertion of any implement into any bodily orifice, unless directed by a veterinarian specifically in connection with training for a medical or reproductive procedure.
- b. Striking an elephant with anything more substantial than an ankus (a traditional training tool used by elephant trainers)
- c. Striking an elephant with any sharp object, including the hook of an ankus (Fowler 1995).
- d. Striking an elephant on or around any sensitive area, such as the eyes, mouth, ears, or genital region.
- e. No tools used in training should be applied repeatedly and with such force that they cause any physical harm to an animal (i.e., breaking of the skin, bleeding, bruising, etc.).
- f. Withholding or reducing an animal's daily-recommended amount of food and or water.
- g. Withholding veterinary care for any reason.

If properly executed training procedures are ineffective in eliminating aggressive or inappropriate behavior in a given animal, institutions should consider other alternatives, including transfer to a facility with more experienced staff or a different management system. Protracted and repeated use of corporal discipline in training is of serious ethical concern and AZA considers abusive training practices to be unacceptable. Further, elephants that are untrained, unexercised, or unable to complete minimum behavioral requirements may be considered neglected and thereby abused.

- 5.2. Management Systems – Different elephant management systems have both advantages and disadvantages (Desmond and Laurie 1991, Doyle 1993, Preist et al. 1998, Schmid 1998). AZA standards for elephant management recognize that a diversity of approaches exist, but encourage members to continue to experiment with the goal of maximizing elephant health and reproduction and minimizing risk of injury to keeper staff (Lenhardt 1991, 2001, Chapple and Ridgway 2001). System definitions have been defined in the PEM Course and are as follows:

Free Contact – The direct handling of an elephant when the keeper and elephant share the same unrestricted space. Neither the use of chains nor the posture of the elephant alters this definition.

Protected Contact – Handling of an elephant when the keeper and the elephant do not share the same unrestricted space. Typically in this system the keeper has contact with the elephant through a protective barrier of some type while the elephant is not spatially confined and is free to leave the work area at will. This includes confined contact, where the handling of an elephant through a protective barrier where the elephant is spatially confined, as in an Elephant Restraint Device (ERD).

- 5.3. Management Protocols – Each AZA member institution and related facility that holds elephants must have a written elephant management policy. This policy must be consistent with AZA standards for elephant management and care, and must, at minimum, include a description of the institution's:
- a. Elephant management program's missions and goals (EMA 1999).
 - b. Elephant management policies, including guidelines for handling, training, and translocation (EMA 1999).
 - c. Plan to separate animals from each other, safely manage elephants that are aggressive toward other elephants, safely move elephants from one location to another, and safely manage elephants that are aggressive toward humans (EMA 1999).
 - d. Staff management policies, including guidelines for keeper safety (EMA 1999).
 - e. Individual elephant profiles and incident reports for all cases in which elephants show aggression toward keepers or the public, regardless if any injury actually resulted.
 - f. Emergency response protocol. Institutions should be able to demonstrate readiness to respond to an emergency situation, such as an elephant escape or keeper injury (EMA 1999).

5.4. Safety Assessment – All elephant-holding institutions must undertake at least a semi-annual elephant facility and program safety assessment, identify safety needs, and fully implement any corrective measures. Each facility shall establish a safety assessment team. The team may include elephant staff, management staff, animal health care staff, and experts in the area of risk management and safety. Each facility should establish the make-up of the team based on its own needs and resources. A written record must be kept for each inspection and that record be reviewed and its recommendations acted upon.

5.5. Restraint

5.5.1. Chaining is acceptable as a method of temporary restraint (Fowler 1995). However, elephants must not be subjected to prolonged chaining (for the majority of a 24-hour period) unless necessary for veterinary treatment or transport. Institutions that regularly use chains for some portion of a day must alternate the chained foot on a daily basis. All new construction and major renovations must be constructed in a manner that minimizes or eliminates the need for chaining (Schmid 1995, Gruber et al. 2000).

****Note:** If AZA policies on chaining require new construction, rather than procedural changes, then institutions will have five years to comply with this requirement. Plans must be in place within three years and institutions must apply for a variance from the AZA Accreditation Commission.

5.5.2. All elephant holding facilities should install an Elephant Restraint Device (ERD) (Schmidt et al. 1991). However, all bull-holding facilities, as well as those that manage elephants in protected contact, must have an ERD. Use of the ERD should not be weather dependent.

5.5.3. Each elephant must be trained to enter and stay in the ERD, if one is available, for husbandry, veterinary, reproductive assessment, and other procedures to occur in a safe and efficient manner (Schmidt 1991).

5.5.4. If a facility does not have an ERD, staff must demonstrate a method of restraint that allows necessary husbandry, veterinary, and reproductive procedures to occur in a safe and efficient manner (Fowler 1995).

6. Staff Organization and Training

6.1. Each institution must have one person, designated as the elephant manager. This individual is responsible for (1) staff training; (2) developing and maintaining the program; and (3) communicating with others about the elephant program. The elephant manager must also demonstrate knowledge about all emergency protocols and continually improve elephant management techniques as the industry standards evolve.

6.2. All elephant managers should attend the AZA Principles of Elephant Management Course within 18 months following acceptance/promotion to the position. In addition, every elephant keeper is encouraged to attend this course.

7. Conservation, Education, and Research

7.1. Education Programs

- 7.1.1. Every institution should institute a program to educate zoo visitors about elephant and elephant conservation issues (EMA 1999, Smith and Hutchins 2000). Assistance is available from the Elephant SSP Education Advisor
- 7.1.2. Every institution should have up-to-date educational graphics and/or information about elephants on display to the public.

7.2. Conservation and Research Activities

- 7.2.1. Every institution should contribute in some way to elephant research activities (Keele and Dimeo-Ediger 1997, EMA 1999, Smith and Hutchins 2000). Involvement in one or more of the following disciplines is strongly recommended: behavior, cognition, reproduction, communication, enrichment, health (disease/pathology, nutrition), and education.
- 7.2.2. Every institution should contribute in some way to *in situ* conservation of elephants and their habitats (EMA 1999, Smith and Hutchins 2000).
- 7.2.3. AZA members are strongly encouraged to provide financial, personnel, logistical, and other support for priority research and conservation initiatives listed in the AZA Elephant SSP/TAG Action Plan (Wiese and Hutchins 1994).

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Elephant Observation Notes on Nov 1, 2004

Due to the recent management problems at the elephant barn, I have spent more time than usual at the barn and observing different aspects of the program and the staff. The following is a list of problems identified and the plan to correct them.

Facility Problems and Concerns:

The solid door on the North side of the barn is rusting out at the bottom and has a hole rusted through at about 8 ft. that could cause injury to an elephant.

The ERD is unusable due to a broken hydraulic cylinder.

The floor of the barn is not sloped enough to allow urine and water to run out of the enclosure forcing the elephants to stand in moisture during the time they are in the barn.

The roof leaks in several areas adding to the water problem on the floor and dripping on the elephants when they are locked in the barn.

Weather Concerns:

This week low temperatures are approaching freezing and we have no way to secure the barn for this weather.

Management and Handling Concerns:

Control over the elephants is limited... Too limited

Staff exhibits careless management practices.

Elephants are not conditioned to the target limiting the ability to achieve necessary behaviors.

New staff appears unaware of proper training and targeting techniques.

Below was established as a management protocol set up on October 28 to deal with Tanzy's problem with the ERD.

Daily Standard Protocol will be as follows:

Once the elephant are checked and yard is cleaned, feed will be place on exhibit. Tanzy will be given an opportunity to leave the barn as normal through the ERD. If she refuses, the door will be closed. Tanya will be chained at the front of the stall. Once secured, keepers will open the north gate and secure it open. Tanya will then be put on exhibit and locked into the ERD. Once she is secure, keepers will then go out into the exhibit to close and secure the door. Once the exhibit is clear, Tanya will be allowed to move about freely in the enclosure. **Due to Tanya bending one of the cylinder shafts on the ERD and trying to bend the new one, Tanzy's only opportunities to exit the barn through the ERD will be when Tanya is secured in the barn. This policy will**

remain until a post can be secured that will prevent Tanya from being able to gain leverage to the door. The only time the ERD will be used is to secure Tanya inside for securing north gate and for blood draws. Tanzy will remain in her stall and given another opportunity to go out around 10 AM. If she refuses, she will get another opportunity around 12, then again at 2 PM. Around 3:30, Tanya will be locked in the ERD. With her secured, the north gate will be unlocked and secured open. Tanya will then be released from the ERD and shifted into the barn through the north door. Once in the barn, she will be chained on one front leg. Once secured, one keeper will remain with her while another goes around the barn to close and lock the gate. PM diets will then be fed.

NOTES TO KEEPERS: During this time, both elephants will be under extreme stress and normal behavior should not and cannot be expected. Take no chances at any time when working in and around the elephant area. While cleaning Tanya's stall, be completely aware of Tanzy. One keeper should watch and hold Tanzy while the other works in Tanya's stall. Although Tanzy has some reason for refusing to go out, she is also frustrated. Each day she has become a little more aggressive toward Tanya. I expect this frustration to continue to grow. We are dealing with psychological issues that we do not currently understand. Bottom line, constantly be aware and on your toes when working in this area. No other staff shall be allowed in this area without permission by the Director. No non-staff person shall be allowed into the area without permission from the Director.