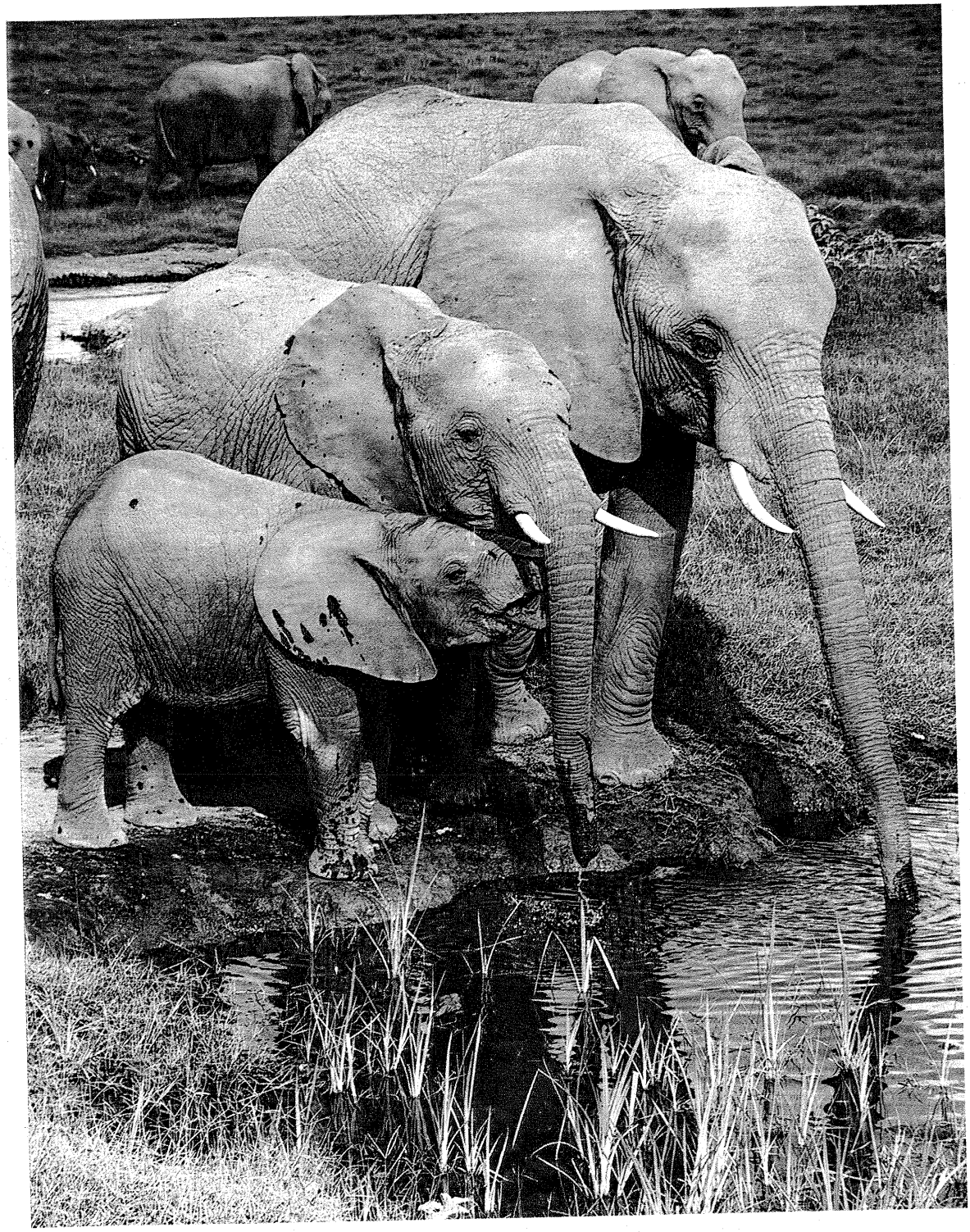
Plaintiffs' Exhibit 1

ASPCA v. FEI, Civ. No. 03-2006

An Elephant in the Room:

The Science and Well-Being of Elephants in Captivity



Edited by Debra L. Forthman, Lisa F. Kane, David Hancocks, and Paul F. Waldau

AN ELEPHANT IN THE ROOM:

THE SCIENCE AND WELL-BEING OF ELEPHANTS IN CAPTIVITY

Edited by
Debra L. Forthman, Lisa F. Kane, David Hancocks
and
Paul F. Waldau

Center for Animals and Public Policy
Cummings School of Veterinary Medicine
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Appendix II

Best Practices by the Coalition for Captive Elephant Well-Being

2005

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Appendix II

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Coalition for Captive Elephant Well-Being is a group of independent welfare-minded zoo professionals, field and laboratory scientists and other academics, veterinarians, animal behaviorists, animal law specialists and animal welfare advocates united in their efforts to articulate a comprehensive set of science-based best practices to improve the care and well-being of captive elephants.

We also recognize the need to state clearly the value judgments informing such standards. Open, intelligent and fruitful debate over the management of captive elephants can only be conducted with a clear articulation of the science and values that constitute a basis for definitions, protocols and standards being promoted. Worthwhile progress in captive elephant management depends on such a debate.

Members of the Coalition are Robert Atkinson, Ph.D., Royal Society for the Prevention of Cruelty to Animals; Richard Farinato, Humane Society of the United States; Debra Forthman, Ph.D., Animal Behavior Consulting Services, Inc.; Jane Garrison; David Hancocks B.Sc., M.Arch., RIBA; Lisa Kane, J.D.; Colleen Kinzley, Oakland Zoo; Gail Laule, M.A., Active Environments, Inc.; Ellen Leach, Behavioral Resources, Inc.; Dan Maloney, Audubon Nature Institute; Laura Maloney, M.B.A., Louisiana Society for the Prevention of Cruelty to Animals; Anita Schanberger; Margaret Whittaker, Active Environments, Inc.; Jeff Williamson, Phoenix Zoo and Sanctuary; Kevin Wright, D.V.M; Gretchen Wyler; and Stephen Zawistowski, Ph.D., American Society for the Prevention of Cruelty to Animals.

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This study is dedicated to Iain Douglas-Hamilton, Ph.D., Cynthia Moss, Ph.D., Joyce Poole, Ph.D., Katy Payne, and Raman Sukumar, Ph.D. Their unsurpassed devotion to the well-being of elephants everywhere is a constant source of encouragement and hope.

Introduction

The Coalition for Captive Elephant Well-Being believes that the care and management of elephants in North America is an issue of signal importance. "Best Practices by the Coalition for Captive Elephant Well-Being" sets forth policies and methods founded on scientific literature. A full discussion of the science and policy decisions relevant to this model code is found in our accompanying report entitled "Optimal Conditions for Captive Elephants." These best practices are intended to serve as a foundation for providing coherent, evidence-based care for captive elephants. Our report entitled "Optimal Conditions for Captive Elephants" and these best practice recommendations are the result of a collaboration initiated in 2003 and concluded in 2007 upon completion of these documents.

Part 1: Overview

This model code of best practices is divided into discrete chapters addressing key ecological classes of variables relevant to captive elephants. Each section begins with a statement of the objective the proposed best practices are designed to achieve. Cross-references to "Optimal Conditions for Captive Elephants" as well as citations to specific articles and treatises relevant to the topic appear throughout these best practices.

Explanatory notes accompany important or sensitive best practices. These notes are intended to explain the basis for the best practice and to direct the reader to additional information available on the topic. For example, explanatory notes accompany the standards on space allowances and the urgent need to establish programs that result in captive elephants walking a minimum of 10 km per day.

Part 2: Environmental best practices

David Hancocks B.Sc., M.Arch., RIBA; Colleen Kinzley, Lisa Kane, J.D., Gail Laule, M.A., Margaret Whittaker, Ellen Leach, Anita Schanberger and Debra Forthman, Ph.D.

Objective: The physical environment in which captive elephants are held must account for their welfare by protecting them from physical discomfort, fear and distress, and simultaneously promoting their physical and psychological health and expression of a full range of species-appropriate behaviors.

E 1: Outdoor access

Elephants must be allowed to stay outdoors as much as possible. Institutions must design exhibits that permit elephants' free access to the outdoors day and night, in the absence of adverse weather, safety or health conditions. It is critical that any new elephant exhibit be constructed only in climates in which elephants can comfortably spend a majority of the time outdoors year round (Clubb & Mason 2002; Hancocks 2002; Coe 2003).

Cross-reference: "Optimal Conditions" **4.8** and **4.12**.

E 2: Building design and maintenance

No physical features of the environment may cause injuries to the elephant. Injuries are defined as any physical trauma or risk of physical trauma, including but not limited to eyes, ears or trunk tip, or damage to tissue severe enough for the formation of granular scar tissue, or injuries requiring surgical intervention, including debriding procedures.

E 3: Limiting use of toxic substances in buildings

Elephants shall not come into close contact with toxic materials, surfaces or fumes, such as paints, preservatives or disinfectants.

E 4: Electrical installations/lighting

Electrical installations shall be inaccessible to the elephants, well-insulated, safeguarded from potential damage, properly grounded and inspected and tested every six months.

a. Lighting levels shall be adequate to ensure staff safety.

b. Full-spectrum lighting of appropriate (tropical) intensity is required in those facilities utilized as winter quarters.

c. Natural lighting shall also be utilized through skylights with full-spectrum glazing and similar design features (Rosenthal & Xanten 1996).

d. Artificial lighting in night quarters should employ rheostats to allow gradual introduction of soft, low-level full-spectrum lighting (equivalent to starlight/moonlight) during nighttime.

E 5: Restraint chutes

Each elephant facility shall be equipped with an elephant restraint device (ERD) subject to routine maintenance, testing and inspection.

a. The ERD should offer protection from extreme weather conditions such as wind, rain and temperature fluctuations.

b. It is recommended that the restraint device open widely enough to allow an elephant to lie down if necessary.

c. An ERD should be accessible from multiple holding areas, especially quarantine or isolation/sick stalls.

E 6: Keeper/staff access

Facilities must be designed to provide safe keeper/staff access to elephants in multiple areas. Access must include direct, tactile access to multiple animals at one time for husbandry and veterinary purposes, and must be appropriate for protected contact training (see e.g., Rosenthal & Xanten 1996).

a. Facilities must be designed to provide sufficient, safe, shielded access to elephants in holding and transfer areas and exhibits. Amount, type and location of shielding should be appropriate to the sex and temperament of the individual animals.

b. All gates, hydraulic or manual, must be operated from keeper areas with clear sight lines from keeper area to gates.

c. Facilities must allow for protected keeper access to elephants during the movement of animals between and within enclosures (Rosenthal & Xanten 1996).

d. Facilities must provide necessary access points to carry out husbandry and veterinary procedures including: holes of different sizes and location to accommodate animals of different sizes and temperament; platforms to allow keepers easy access to elephants' eyes, ears and back; foot holes that comfortably accommodate an elephant's foot during protracted foot work and allow adequate space for human hands; and safe access for health assessment.

e. Facility design must allow keepers to work and move through the area without being within trunk's reach of elephants. Facilities must allow keepers to interact with single or multiple elephants at the same time and at one location.

f. Facilities must allow separation of individuals for training purposes and/or for animal safety or health purposes.

g. Facilities must have multiple locations where staff may enter the elephants' space once elephants are safely and appropriately restrained for veterinary or emergency purposes. Provision should be made to permit chains on one or all four legs.

h. Facilities must be designed to have maximum visual access to elephants to monitor behavior.

i. Holding areas must allow multiple options for separate or group housing to deal with social incompatibilities. Routine and frequent chaining is not an acceptable method for managing social interactions (Brockett, Stoinski, Black, Markowitz et al. 1999).

E 7: Facilitating introductions

Appropriate facilities must be available to facilitate all phases of the introduction process of new members to the existing social group. Due to the multiple phases of introduction (including visual and olfactory contact only, to limited tactile contact, to greater tactile contact, to full physical contact with escape areas for animals to retreat to while the relationship is being established), facilities must also allow keeper access to safely intervene to disrupt interactions that may lead to potential injury.

E 8: Space allowances

a. Indoor facilities used only for overnight housing shall provide at least 60 sq. m (650 sq. ft.) of space for each female elephant and for any calf.

b. Indoor facilities used for winter quarters shall provide at least 185 sq. m (2,000 sq. ft.) of space for each female elephant and for any calf.

c. Indoor facilities used only for overnight housing shall provide at least 110 sq. m (1,200 sq. ft.) of space for each male elephant.

d. Indoor facilities used for winter quarters shall provide at least 370 sq. m (4,000 sq. ft.) of space for each male elephant.

Note: The overnight space of 60 sq. m was calculated by determining the space necessary for an elephant to sleep without lying in its own waste.

E 9: Flooring

a. Floors shall be made of non-slip material, rubberized material or natural substrate and be maintained to reduce the risk of slipping. Ideally, artificial flooring would have a rubberized or other coating providing a degree of flexibility, elasticity and thickness comparable to a natural substrate (Clubb & Mason 2002).

b. Floors may not be so rough as to contribute to foot damage (Clubb & Mason 2002).

c. Smooth concrete floors may be grooved or treated with a non-slip coating.

d. Waterproof soft coverings or similar temporary floor covers shall be provided to elephants confined to hard indoor surfaces for eight or more hours (e.g., Sommer 1974; Glickman & Caldwell 1994).

e. At least one-half of the flooring of winter quarters shall be heated during periods of cold weather. Heated flooring shall be accessible to every elephant. Floor temperature shall be moderated to prevent over-drying or burning of feet, nails, body pressure points or other vulnerable parts of the elephant's body.

f. Floors shall be graded to ensure good drainage (Rosenthal & Xanten 1996).

g. Floors shall be cleaned with sufficient frequency to provide a clean, dry surface for a majority of the time that elephants are confined indoors (Csuti, Sargent & Bechert 2001).

E 10: Special holding areas

Each housing unit shall include an isolation/quarantine area for sick or injured animals of sufficient size to permit the safe and effective delivery of veterinary care (Rosenthal & Xanten 1996) and the removal of the animal to a remote necropsy site should it die.

An area for loading and unloading elephants must be designed. This area should readily accommodate the loading and unloading of a crate, and a rear or side-loading trailer. This loading area should be accessible to the quarantine or isolation stalls.

E 11: Freedom of movement

The interior shall be designed to promote freedom of contact between established group members. Interiors must be designed in a manner that provides a continual flow of movement or "free flow" with no dead ends (Glickman & Caldwell 1994; Forthman, McManamon, Levi & Bruner 1995). Design flexibility should include options allowing elephants to choose physical and visual privacy and barriers to meet their social needs.

E 12: Confinement

The interior shall be designed to permit the option of confining an individual, pair or grouping to a particular space without preventing movement of the other elephants in and out of the barn. Overnight chaining of elephants is prohibited. There shall be areas where elephants can be temporarily and safely chained for veterinary procedures and in emergency situations when movement is not an option.

Cross-reference: "Optimal Conditions" **4.24**.

Note: The deleterious effects on elephants subject to overnight chaining are well-documented (Lehnhardt 1984; Brockett et al. 1999; Gruber, Friend, Gardner, Packard et al. 2000; Clubb & Mason 2002). Of developmental concern, controlled experiments with small mammals have demonstrated that the sensory feedback accompanying movement plays a vital role in perceptual development (Leach 1995).

E 13: Thermal conditions

a. During winter months, indoor ambient temperatures shall be maintained at no less than 16°C (60° F) unless the elephant's behavior indicates a lower temperature is appropriate.

b. Isolation/quarantine holding areas intended for veterinary use (see **E 7**) shall be capable of being heated to 21°C (70°F).

c. During warm weather, indoor ambient temperatures may not exceed 23.5° C (74°F). If ambient temperatures exceed 23.5°C (74°F), then access to alternatives like an outdoor night corral or pool must be provided (Langman 1990, Langman, Rowe, Forthman, Langman et al. 2003; Sampson 1999).

d. When temperatures fall below 4.5°C (40°F), elephants given access to the outside must be provided simultaneous indoor access or access to an outdoor area heated to at least above 4.5°C (40°F).

Note 1: Kinzley (pers. comm. Jan. 12, 2005) advises that captive elephants display discomfort with ambient air temperatures that are too high by throwing feces on themselves when confined. Different animals prefer different minimum indoor temperatures. For example, at the Oakland Zoo one elephant prefers an air temperature inside the barn from 5.5°C to 7°C (45°F to 50°F), while another prefers 15°C to 17.5°C (55°F to 65°F). The Oakland Zoo accommodates these preferences by individualizing the air temperature in each stall. It has also been observed that elephants may throw water on themselves when ambient air temperatures are too high.

Note 2: Recent research indicates that the thermal equilibrium of captive elephants is more closely correlated to environmental radiation than to air temperature alone (Rowe, Langman, Bakken, Forthman et al. in prep.). Current AZA elephant management guidelines recommend bringing elephants indoors at 40°F, but thermal energy exchange for an elephant at 40°F on a sunny day is quite different than 40°F on a cloudy day. Inter- and intra-species variation in elephants' ability to respond behaviorally and physiologically to thermal extremes may exist due to differences in size, anatomy, and thermal acclimatization. Therefore a thermal index for management of elephants exposed to cold temperatures should be based not just on temperature but on the elephant's size and existing environmental radiation (Rowe in prep.).

E 14: Ventilation

Effective ventilation of all indoor spaces, defined as four air changes per hour, shall be provided. Air movement shall be at low velocity to avoid drafts and shall exclude ingress of rain or snow.

E 15: Space allowances, design and maintenance

Outdoor exhibit space must be of sufficient size and complexity to achieve the following performance goals:

a. Healthy elephants shall have sufficient space to travel a minimum of 10 km (seven miles) on a daily basis while engaged in natural behaviors like foraging, feeding, exploring, socializing and the like (Hancocks 1996, 2002; Seidensticker & Doherty 1996; Coe 2003). All elephants shall have access to useable pasture year round and grassy pasture six months out of every 12.

Note: Elephants are physically vigorous, non-territorial animals that move almost continuously for 20 out of every 24 hours (Moss 1988). Sukumar (2003) calculates that elephants range 10 to 20 km (seven to 13 miles) per day without regard to species type. It follows that elephants must be given a space sufficient to meet their exercise needs, minimize competition for resources, maximize opportunities for socializing or refuge from socializing and maximize flexibility for caregivers to provide enrichment.

See Kinzley (Chapter 12) and "Improvement in Elephant Management at the Oakland Zoo," for

A pragmatic discussion of the use of browse, training opportunities, exhibit configuration and nighttime outdoor access to create conditions in which three captive adult elephants walked 3.2 km (two miles) a day in an enclosure totaling only 6,000 sq. m (1.5 acres). Using pasture-rotation techniques, Oakland Zoo's staff provide their elephants ongoing access to significant grassy pasture year round. After the exercise and enrichment program was put into place, Oakland's elephants each lost between 500 and 700 pounds.

b. Elephants must have access to their outdoor holding/exhibit areas with natural substrates 24 hours a day, in the absence of temporary adverse weather, safety or health conditions (Seidensticker & Doherty 1996).

c. A variety of substrates and substrate types shall be provided (Seidensticker & Doherty 1996; Baer 1998, p. 282-283) including different types of clean dirt, mulch, sand, well-established grasses and sedges, etc. (Forthman et al. 1995).

d. Outdoor space shall be graded for effective drainage (AZA 2003).

e. Outdoor holding/exhibit spaces shall include multiple dry areas capable of routine cleaning on which feed, minerals, etc., may be placed.

f. Outdoor exhibit space must include a variety of slopes and terrain sufficient to allow and encourage significant muscular activity. Slopes and terrain must be of sufficient height to provide viewing vistas for the elephants (Clubb & Mason 2002; Hancocks, pers. comm. March 15, 2005).

g. Configuration of the exhibit area must include destinations, like quiet pools, trees, rock features, and options for the elephants to socialize or to avoid socializing (Baer 1998; Seidensticker & Forthman 1998; Coe 2003).

h. Outdoor space shall be cleaned daily or more often of solid waste unless the space is large enough to allow pasture rotation (AZA 2003).

i. Outdoor exhibit/holding areas shall provide space to isolate an individual to address behavioral issues or to provide safe and effective veterinary care (Baer 1998).

j. Outdoor exhibit/holding areas shall provide multiple sites for wet (mud) and dry (dust) wallows (Forthman et al. 1995).

Note: The most useful shape for zoo paddocks is typically elongated, so that the length is greater than the depth. This creates the best viewing opportunities for visitors and allows for the introduction of pockets of vegetation along the viewing edge to enliven the viewing sequence and to create openings for sheltered and discrete viewing bays. More importantly, it encourages the animals to circulate and explore. This benefit is enhanced if islands of vegetation and other environmental features are included within the paddock, so that the animal space is not simply one empty and undefined space. If the vegetation in these paddock islands is sufficiently dense and tall, this will provide shade to the interior of the paddock, and will also define specific spaces to increase spatial cognition and to enhance visual interest by alternately revealing and hiding views. There should be no angles less than 90 degrees for any part of the perimeter of the main enclosure, to avoid animals getting trapped. The topography should be varied and, especially for elephants, should present sufficient variation to ensure some challenges for them to exercise their muscles in regular daily activities (Hancocks, pers. comm. Feb. 12, 2005).

E 16: Fencing

a. Fencing shall be maintained in good condition and must be capable of withstanding an elephant's physical strength and curiosity. Pipe and cable fencing is recommended for cows and calves. Bull fencing should withstand the force a seven-ton animal can exert (Hancocks 1996).

b. Doors and gates shall be configured to prevent elephant escapes and to protect staff.

c. All fencing or other containment systems must prevent contact between elephants and the public.

d. Doors and gates must be designed to withstand the force of an adult elephant. Back-up generators must be on line to operate hydraulic or electrically powered doors or gates (AZA 2003).

e. Ha-ha moat systems, with a perpendicular face on the public side and a 30-degree or less slope on the animal side, are acceptable. Other dry-moat containment systems are prohibited as they pose a substantial threat to elephants; deep, narrow-sided and hard surfaced moats are particularly dangerous (Hancocks 1996; AZA 2003).

Note: Although not practical or advisable for zoo situations,Rhino Ark reports that the Aberdare fence "is a flagship operation in terms of quality construction/longevity of materials in Kenya." It is not purely an elephant fence but is designed to protect farmers from all types of marauding animals. Core details include: 10-foot plastic posts countersunk three feet below ground; in the first three feet above ground, the posts are connected with tight lock wire mesh, while in the top four feet, the posts are connected by six high tensile wire strands electrified from 5,000-7,000 volts (C. Church, pers. comm. Jan. 22, 2005).

E 17: Limiting use of toxic substances in outdoor holding/exhibit areas

Elephants shall not come into close contact with toxins or fumes while in outdoor holding and exhibit areas.

E 18: Thermoregulation

Outdoor holding and exhibit areas shall provide elephants a variety of options for thermo-regulation to allow the elephant to maintain an appropriate core temperature (Langman 1990; Rees 2002; Langman et al. 2003).

Cross-reference: "Optimal Conditions" **4.12.**

E 19: Windbreaks

Windbreaks of sufficient height and density to be effective may include buildings, manmade shelters, natural shelters like tree belts or natural geographic features.

E 20: Sun/Shade

Shade from the sun, with wind and without wind, shall be available whenever an elephant is on exhibit or in an outdoor-holding area (Langman 1985, 1990; Forthman et al. 1995, Langman, Rowe, Forthman, Whitton et al. 1996; Langman et al. 2003).

Cross-reference: "Optimal Conditions" **4.12**.

E 21: Water features

a. All outdoor exhibit areas shall provide access to one or more deep pools that provide graduated increasing depths to allow several adult elephants to submerge simultaneously (Seidensticker & Doherty 1996; Markowitz & Aday 1998).

b. All outdoor pools shall be equipped with a high-volume filtration system or other system ensuring sufficient water exchange to avoid build-up of waste materials.

c. Pools should have multiple entry points to prevent one elephant trapping another in the pool.

d. Entry into the pools should be gradually stepped or sloped to allow elephants easy access, and should be surfaced to allow good footing while preventing foot or skin abrasions (Forthman et al. 1995).

e. It is recommended that pools be located to permit staff reasonable proximity to them for training purposes.

f. Ideally, pools should be deep enough in at least one location to allow an elephant to float in complete submersion.

E 22: Tactile

a. Varied rubbing surfaces at varied heights shall be installed in both indoor and outdoor exhibit areas. These are particularly useful if near a pool (Forthman et al. 1995).

b. Both wet and dry wallows (see **E 15** i; **EN 2** c) shall be provided in indoor and outdoor exhibit areas.

E 23: Auditory

Non-species-specific noise (e.g., from ventilation fans, blowers and other mechanical systems, and traffic and amusement rides) shall be kept to an absolute minimum in both indoor exhibit space and outdoor exhibit areas (Peterson 1980; Stoskopf 1983; Krause 1989; Gold & Odgen 1991; Forthman et al. 1995; Forthman 1998). Special attention must be paid to minimizing low-frequency noise, including seismic noise, due to elephants' sensitivity to these sounds.

Cross-reference: "Optimal Conditions" **4.14**.

Part 3: Enrichment best practices

Lisa F. Kane, J.D., David Hancocks B.Sc., M.Arch., RIBA, Gail Laule, M.A., Ellen Leach and Debra L. Forthman, Ph.D.

Objective: Planned, systematic enrichment strategies based on a thorough knowledge of elephant species' natural history are critical to promote an individual elephant's behavioral competence and to preserve the range of species-typical behaviors.

EN 1: Design features/outdoor exhibit space

a. Exhibit layout shall provide multiple opportunities for socializing and refuge from other elephants and the public's view (Seidensticker & Doherty 1996; Seidensticker & Forthman 1998; Schulte 2000).

b. Exhibit layout shall provide features permitting novel and variable placement of sensory-stimulating scents, objects, minerals or forage (Seidensticker & Doherty 1996; Markowitz & Aday 1998).

c. Exhibit spaces shall afford a diversity of both long and short views within and outside of the enclosure.

d. Varied rubbing surfaces, whether rocks, tree stumps or other large sturdy objects, at differing heights, shall be installed (Forthman 1998; AZA 2003).

e. Easy and ready access for vehicles such as cranes, trucks and motorized loaders must be provided.

f. Large trees or shade devices must be included in the design so as to cast shade over at least 33 percent of the exhibit space and 66 percent of any individual holding space at any time of day during warm weather (Hancocks, pers. comm. March 15, 2005).

Cross-reference: "Optimal Conditions" **4.16-4.19.**

EN 2: Building design features

a. Indoor holding and exhibit areas shall be designed to promote opportunities for elephants to socialize freely with companions with whom they are fully integrated. Areas of refuge shall also be provided (Seidensticker & Forthman 1998; Schulte 2000; Coe 2003).

b. Indoor exhibit areas shall be designed to provide novel and varied locations of scent, minerals or other stimulating objects (Shepherdson 1998).

c. Indoor winter quarters shall provide indoor wet (mud) and dry (dust) wallows (Seidensticker & Doherty 1996; Clubb & Mason 2002).

d. Indoor areas should be designed to provide varied locations and methods to offer daily browse, feed and hay (Seidensticker & Doherty 1996).

e. Indoor winter quarters shall be designed to maximize utilization of natural sunlight.

Broad-spectrum lighting fixtures shall be placed to maximize benefit to the elephants.

f. Indoor holding and exhibit areas shall include diverse rubbing surfaces at varied heights.

EN 3: Exhibit furniture

a. Outdoor areas: Staff shall rotate appropriate exhibit furniture (e.g., street sweeper brushes, large tires, climbing rocks, scratching posts, sticks, logs, root balls and sunken trees) in and out of the exhibit areas on a sufficiently regular basis to maximize physical and mental stimulation (Poole 1998; Shepherdson 1998).

b. Indoor areas: Staff shall provide and rotate appropriate exhibit furniture in and out of the exhibit areas on a sufficiently regular basis to maximize physical and mental stimulation and minimize habituation (Poole 1998; Shepherdson 1998; Hancocks, pers. comm. March 20, 2005).

EN 4: Food

Fresh browse and other edible plant material shall be provided on a daily basis (Baer 1998, p. 285-287), and be introduced into the exhibit with temporal and spatial variability (Seidensticker & Doherty 1996; Baer 1998, p. 288-289; Kreger, Hutchins & Fascione 1998, p. 69; Clubb & Mason 2002) permitting each elephant approximately 16 hours of browsing, foraging or feeding each day (Seidensticker & Doherty 1996; Lindburg 1998, p. 266-268; Clubb & Mason 2002), whether outdoors or indoors.

Cross-reference: "Optimal Conditions" **4.16** and **4.19.**

Note: "Activities concerned with food-getting and food consumption offer excellent opportunities for enriching captive animals"(Lindburg 1998, p. 264). Given the central importance of foraging and feeding to elephants' habitat use and activity budget, the provision of foraging activities is critically important to the well-being of captive elephants.

EN 5: Water features

a. The elephants shall have free access to water features whenever they are in the outdoor exhibit (Seidensticker & Forthman 1998).

b. Multiple wet (mud) and dry (dust) wallows shall be available (Seidensticker & Forthman 1998).

c. Indoor holding/exhibit areas utilized as winter quarters shall provide one deep pool in which three elephants may submerge simultaneously (Seidensticker & Doherty 1996).

d. Indoor holding/exhibit areas shall provide one shallow pool or sprinkler system.

e. Indoor holding/exhibit areas shall provide at least one wet (mud) wallow and one dry (dust) wallow (Seidensticker & Doherty 1996).

EN 6: Olfactory

Enrichment shall include olfactory stimulation through novel and varied placement of scents.

Cross-reference: "Optimal Conditions" **4.14.**

EN 7: Planning and implementation

a. Effective, systematic enrichment aimed at enhancing species-appropriate behavior results from careful planning. Accordingly, the competence of each elephant shall be assessed in terms of its species' natural history and its individual competence, and a program developed to ameliorate deficiencies and support strengths (Laule & Desmond 1998; Swaisgood, Ellis, Forthman & Shepherdson 2003).

b. Enrichment should be scheduled on a daily, weekly or monthly basis in order to insure variability. Success of enrichment shall be regularly and systematically assessed.

Note: The practice of confining elephants to indoor quarters for the duration of winter should be abolished. Elephants should be able to comfortably, routinely spend the majority of time year-round outdoors. Shorter periods of confinement during inclement weather may be inevitable, but must be addressed by providing stimulating options and behavioral alternatives to maintain and promote exercise and mental acuity. Reasonably adequate enrichment under these trying circumstances results only from careful planning. Accordingly, daily plans addressing the full range of issues, including exercise, bathing, foraging, socializing and training must be developed, implemented, evaluated and redesigned as needed (Laule & Desmond 1998; Shepherdson 1998; Swaisgood et al. 2003).

See Enrichment Guidelines, AZA Elephant Management Standards (2003) and "Improvement in elephant management at the Oakland Zoo" (Kinzley 2001) for discussion of enrichment strategies that also encourage exercise for captive elephants.

Part 4: Occupational best practices

Lisa F. Kane, J.D., Colleen Kinzley, Debra L. Forthman, Ph.D. and Gail Laule, M.A.

Objective: Elephant species' activity cycles and use of habitat are keys to their success in the wild and welfare in captivity. The provision of ample space and opportunity for movement and foraging are vital to ensure captive elephants' welfare.

O 1: Exercise

Large exhibits or habitats are essential to permit the placement of varied resources in multiple sites to promote exercise (Hancocks 1996; Seidensticker & Doherty 1996; Coe 2003; Kinzley, Chapter 12; Poole & Granli, Chapter 1). It is recommended that a healthy captive elephant walk a minimum of 10 kilometers (six miles) a day. A full range of exercise should be encouraged and designed for, including walking, running, turning, reaching, stretching, climbing, bending, digging, pushing, pulling and lifting.

Cross-reference: "Optimal Conditions" **4.8, 4.12** and **4.13.**

Note: Elephants are physically vigorous, non-territorial animals who move almost continuously for 20 out of 24 hours (Moss 1988). African elephant ranges can be thousands of square kilometers. For a brief description see Shoshani (1992, p. 141-143). Asian elephants may also range over thousands of square kilometers (Sukumar 2003). African elephants may travel approximately 500 to 650 km (300 to 400 miles) during seasonal migrations (Langman et al. 1995, p. 629).

During migration, African elephants in Namibia may even travel 90 to 180 kilometers per day (Sukumar 2003). Elephants range daily over significant distances to exploit resources. Shoshani calculates 30 to 60 kilometers (19-37 miles) per day for African elephants (1992). Sukumar (2003) calculates 10 to 20 kilometers (six to 12 miles) per day for elephants without regard to species. See "Improvement in elephant management at the Oakland Zoo," for a pragmatic discussion of the use of browse, training opportunities, exhibit configuration and nighttime access to the outdoors to create the conditions in which captive elephants walk a minimum of 3.2 km (two miles) per day in exhibit space equaling 6,000 sq. m (1.5 acres).

O 2: Foraging

Food or browse shall be distributed in a manner that permits and encourages significant, sustained foraging behavior for at least 16 hours each day (Seidensticker & Doherty 1996; Lindberg 1998; Clubb & Mason 2002). A variety of enrichment and environmental features should be provided that require animals to work for their food, such as devices that must be opened, are almost out of reach, include multiple steps, ration the amount of food, are triggered by behavioral responses and the like.

Cross-reference: "Optimal Conditions" **4.16-4.19**.

Note: Because elephants are adapted for feeding on plant material with relatively low nutrient content, feeding occupies about 70 to 80 percent of their waking hours (Eisenberg 1981). Elephants spend approximately 16-18 hours a day browsing, grazing and foraging. Given the importance of foraging and feeding to elephants' habitat use, including ranging patterns and occupational activities, activities concerned with food getting and food consumption are critical. Elephants must be offered basic occupational options that include adequate room to roam on a variety of substrates with access to appropriate plant material for near-continuous feeding (Eisenberg 1981; Moss 1988; Estes 1999).

Institutions must develop feeding strategies that are constantly challenging for the elephants. For example, rather than placing hay on barn floors, some zoos place hay nets and specially designed hay containers at varying elevations that require the elephants to reach up and over certain structures (like walls) to retrieve the hay. Some placements require the elephants to kneel down and stretch their trunks under a containment fence to pull hay out of a hay container secured outside the exhibit (Schanberger, pers. comm. Feb. 28, 2005).

O 3: Bathing

Access to wet and dry bathing areas shall be provided at least 12 hours each day.

Note: Elephants bathe or dust themselves daily by choice (Moss 1988; Estes 1991; Sukumar 2003). Eisenberg reports that Asian elephants are never far from water (1981). Access to water, mud and dust wallows is, therefore, critical to captive elephants.

O 4: Socializing

Elephants shall enjoy self-directed social access to each other a majority of the time, in the absence of health, safety or behavioral constraints or training sessions (Rees 2001; AZA 2003). Self-directed social access means unrestricted (e.g., no chains and no barriers) physical contact for socially integrated animals. Enrichment and environmental features should be provided to encourage social behavior (Schulte 2000) that is cooperative as well as competitive, such as feeding devices that require two animals working together to access food, play devices that allow tug-of-war types of interactions and the like.

Cross-reference: "Optimal Conditions" **4.7**, **4.20** and **4.21**.

Note: Elephants are socially gregarious, intelligent animals, whose herd life is marked by routine periods of intense socializing apparently aimed at herd cohesion. Elephants are very much contact animals. Family members often stand touching while resting or drinking. They lean and rub their bodies together, and often touch one another with their trunks in various contexts" (Estes 1991, p. 262). Herd members engage in greeting ceremonies, play, play-fighting and synchronized moving, bathing and resting (Douglas-Hamilton and Douglas-Hamilton 1975; Moss 1988; Sukumar 2003). Accordingly, it is important that elephant managers maximize opportunities for elephants, particularly females, to engage freely in natural social behaviors in order to promote socially competent animals (Rees 2001; Coe 2003).

Part 5: Social best practices

Lisa F. Kane, J.D., Debra L. Forthman, Ph.D., Colleen Kinzley, Gail Laule, M.A., Margaret Whittaker, Ellen Leach and Anita Schanberger.

***Objective*: Elephants are highly social animals that live in a matriarchal society with two distinct social organizations (males and cow-calf or breeding herds) with separate behavioral traits. Protection and promotion of elephants' matriarchal-clan society is essential to their welfare in captivity.**

S 1: Conspecific herds

Elephants shall be held in social groups of conspecifics (Asians with Asians and Africans with Africans: Clubb & Mason 2002). Acceptable exceptions are those elephants that are not conspecifics but have formed strong bonds with one another. Bonded animals demonstrate a high level of affiliative behavior such as seeking close physical contact and/or proximity to another on a regular basis and simultaneously demonstrate low levels of agonistic behavior to the other (Seidensticker & Doherty 1996).

Cross-reference: "Optimal Conditions" **4.7**, **4.20** and **4.21**.

Note: Wild elephants live in a non-territorial matriarchal clan society (Eisenberg 1981, p. 185-186; Estes 1999, p. 225). Social relationships are central to elephant life and it is, therefore, important to house elephants together so that confined individuals may communicate and socialize with their herd partners (Moss 1988; Sukumar 2003). Irreversible damage such as imprinting (species identity confusion: Lorenz 1937) and profound neurological disturbances such as sleep cycle disruptions and altered galvanic skin responses have been documented in some species lacking the presence of conspecifics during

development (Overall 1997; Bradshaw, Chapter 4).

S 2: Minimum cow/calf herd size

Females, including female adults or females and calves, shall be held in stable social groups. African savanna elephants shall be held in groups no smaller than 10 (10 adults); African woodland and Asian elephants shall be held in groups no smaller than five (five adults).

Cross-reference: "Optimal Conditions" **4.7**, **4.19** and **4.20**.

Note: Data collected on both continents suggest that matriarchal group size is positively correlated with habitat features, resource availability and human predation (Sukumar 2003). African savanna populations congregate in the largest groups observed. "Mean group sizes of over 10 individuals have been recorded commonly in several populations" (2003, p. 172). Fifty percent of the groups observed contained from 10 to 30 individuals. Elephant groups in African woodland habitats and Asian dry forests typically range from five to 10 individuals. Smaller mean group sizes of two to three were observed in African rain forests (Sukumar 2003). Elephants on both continents periodically gather into congregations composed of several groups in response to social needs, including "networking among individuals or groups, reinforcing bonds between related members, [and] mating opportunities" and resource acquisition (Sukumar 2003, p. 174).

Captive elephants cannot respond to environmental factors that would otherwise influence their herd size. At the same time, captive elephants' need for social connection, complexity and support, for example in raising calves, is assumed to be constant, irrespective of environmental factors. It is also true that while congregations of large number of individuals are common experiences for elephants in the wild, captive elephants will never experience the networking, bonding or mating opportunities these congregations offer. Further complicating the question is the limited nature of the data available (Sukumar 2003). We elect, therefore, to rely on the most frequently observed group size closest to the mean of the whole population subject to the studies reported. In the case of African savanna elephants, the most frequently observed group size was 10-24 individuals. The most frequently observed groups in Asian dry forests ranged from five to seven individuals. The most commonly observed groups of African rain forest elephants were two to three individuals. Because no elephant holding facilities exist or are expected that could in any appreciable manner meet the environmental complexity of a rainforest, these best practices do not address African rainforest elephants (Loxodonta cyclotis) *separately from African woodland elephants* (Loxodonta africana).

S 3: Cow/calf herd stability

a. Female calves may never be separated from their mothers, absent extraordinary cause (Moss 1988, *passim*; Estes 1991, p. 260-261; Taylor and Poole 1998; Estes 1999, p. 225-227).

b. Related females may never be separated from each other, absent extraordinary cause (IUCN Guidelines 2001 Draft, p. 17-18).

c. Male calves shall not be separated from their mothers before reaching sexual maturity (eight to 10 years or older; Lee & Moss, Chapter 2) unless the calf exhibits behavior, whether play-fighting or other form of aggression, that risks injury to its mother or other herd members (Moss 1988, p. 101; Estes 1991, p. 261).

Cross-reference: "Optimal Conditions" **4.7**, **4.20** and **4.21**.

Note: The role of the family and herd is the core social experience of all elephants. Even a cursory review of elephant species' natural history furnishes ample evidence that the integrity of the social herd is the single most important element of an elephant's life (Douglas-Hamilton 1975, passim*; Eisenberg 1981; Moss 1988,* passim*; Estes 1991, p. 259-267; Estes 1999, p. 225-227; Sukumar 2003). It is the herd that creates "a social milieu in which the young elephant can mature and learn its role in adult life" (Eisenberg 1981, p. 183). Given the powerful role of social relationships in the health of the individual and the herd, it is imperative that captive female elephants intended for breeding be given an appropriate social context in which to undertake the task of delivering and raising a calf. Accordingly, elephant management decisions must protect and promote the integrity and stability of the cow-calf herd (IUCN Guidelines 2001 Draft, p. 16-18, 23-24).*

As Ian Whyte, former Senior Scientist, Large Herbivores, Kruger Park, wrote, "...it would be inhumane to remove juveniles from their families at any time or for any reason. Elephants have very strong social bonds. Daughters stay with their mothers for as long as they are both alive, even after the daughter has achieved sexual maturity and has young of her own...I believe that to knowingly separate juveniles from their mothers is inhumane" (Whyte 2003, p. 1).

S 4: Bonded individuals

Bonded individuals, conspecific or non-conspecific, shall not be separated from each other, absent extraordinary cause.

Note: see ***S 1*** *for definition of bonded individuals and note to* ***S 3: Cow/calf herd stability.***

S 5: Sub-adult males and adult males

Those institutions electing to hold both bulls and cows shall provide separate facilities, including separate night quarters and yards for bull elephants, as well as the option of common housing and yards for bulls and cows.

Note: Males in the wild have been observed to develop strong associations (Moss & Poole 1983; IUCN Draft 2000, p. 23). African males are also often observed in proximity to female herds, well within a distance permitting olfactory, visual and auditory communication (Moss 1988, passim*; Payne 1998,* passim*). Asian bull elephants in the wild have social contact with cow/calf herds and other bulls throughout their lives (Sukumar 2003). Bull elephants, cows and calves can all benefit from significant social interaction together. Therefore, it is important to plan for and provide opportunities maximizing bulls' socialization with females and calves. At the same time, experience and common sense may dictate that certain bulls are not good candidates for a social grouping that includes cows and calves. Males are much larger than females and, as is common in the captive setting, both adult and young males may attempt to engage the females in sparring contests. In the wild, females typically are not faced with this type of interaction and would not face such an interaction without the assistance of other herd members. These unnatural contests and interactions can result in injury to the females. Males who engage dominant females may be repressed from normal sexual and behavioral development, resulting in reduced reproductive potential. It follows that institutions holding both bulls and cows must approach their housing and social management with flexibility and must design their physical facilities to address contingencies and provide options (Whittaker, pers. comm. Feb. 12, 2005).*

S 6: Socially integrated context

Elephants must be maintained in a socially integrated context where they share the same physical space a majority of the time.

Part 6: Nutrition and water best practices

Lisa F. Kane, J.D., Debra L. Forthman, Ph.D. and Ellen Leach

Objective: Elephants shall have access to clean, fresh water and a diet designed to maintain health and promote a positive state of well-being. Feed and browse must be distributed in a way that promotes full employment of each herd member's appetitive-foraging behavior. Free access to water for consumption and bathing is also essential.

A. Nutrition

N 1: Feeds

Elephants shall be provided a wholesome, nutritionally complete and balanced diet composed of grass hays, pasture, living and cut browse and judicious portions of concentrated feeds (grain and vegetables) (Oftedal, Baer & Allen 1996; Clubb & Mason 2002).

Note: For additional discussion, see "Elephants: nutrition and dietary husbandry." Nutrition Advisory Handbook, AZA Fact sheet 004, September 1997.

N 2: Free access to feed or browse

Hay of varying mixtures and fresh browse shall be provided in a manner calculated to permit each herd member to engage in non-competitive, appetitive foraging behavior for at least 16 hours each day (Forthman et al. 1995; Clubb & Mason 2002).

Cross-reference: "Optimal Conditions" **4.16-4.19**.

N 3: Nutrients/minerals

Managers shall be aware of mineral deficiencies and excesses in the elephants' diet and shall correct them as appropriate (Oftedal, Baer & Allen 1996). Other nutrient imbalances may occur in the elephants' diet (such as protein or vitamin E) and shall be corrected. As more nutrition information becomes available for elephants, managers shall adjust the elephants' diets accordingly and in a timely manner.

Note: Vitamins in excess can be toxic. Other nutrient imbalances, such as excessive amounts of protein, may also cause serious health problems.

B. Water

N 4: Water supply

1. Clean, fresh water must be freely available at all times.
2. Water troughs and shallow pools shall be kept clean and free of contamination.

3. Free, continuous access to water shall be provided, whether elephants are indoors or outdoors.
4. Watering equipment must be designed, constructed, placed and maintained to minimize contamination.
5. Placement of water troughs shall not result in wetting/fouling of bedding or resting areas.

N 5: Emergency water supply

A generator or other backup energy source shall be in place to ensure an alternative supply of suitable drinking water is available in case normal supplies fail (e.g., power blackout). Alternatively, there must be a backup plan in place for obtaining water in case of emergency.

Part 7: Training best practices

Gail Laule, M.A. and Margaret Whittaker

***Objective**: The humane and effective management of elephants in captivity is an expensive and complex challenge that requires ongoing institutional commitment. Elephants are highly intelligent, long-lived animals capable of learning a large repertoire of behaviors. Positive-reinforcement-based training is critical for providing them with mental and physical stimulation, gaining their voluntary cooperation in husbandry and veterinary procedures and promoting their autonomy. Staff having contact with elephants must have strong skills in positive reinforcement training, operant conditioning and problem-solving.*

A. Management system options

T 1: Protected contact: definition

Protected contact is a system for managing elephants that uses positive reinforcement training as the primary method to modify behavior and gain the voluntary cooperation of the animal; physical punishment is prohibited. Directing the positioning and movement of the elephant is achieved through the use of successive approximation (shaping) or targets or both. Keeper safety is achieved by elephant and keeper positioning relative to each other and to a barrier that typically separates human and animal spaces. Trainers intentionally function outside the elephant social hierarchy and do not attempt to establish a position of social dominance (Desmond & Laule 1991; Laule & Whittaker 2001).

T 2: Protected contact: implementation

Captive elephants shall be managed under a protected contact management system as defined in T 1.

Cross-reference: "Optimal Conditions" **4.22**, **4.23** and **4.25**.

Note: Protected contact relies primarily on positive reinforcement and the use of targets to shape behaviors. Methodical, skillful use of positive reinforcement coupled with knowledge of the species as well as the individual animal is effective in gaining the cooperation of the animal, shaping its behavior and

simultaneously limiting danger to keepers. Positive reinforcement and principles of protected contact promote the animal's control over its environment, thus reducing its experience of stress (Desmond & Laule 1991).

T 3: Free contact: definition

Free contact is a system for managing elephants that uses negative and positive reinforcement, and physical punishment, to modify behavior. Directing the positioning and movement of the elephant is achieved primarily through the use of an ankus. Trainers and elephants share the same physical space. Trainers intentionally function in a position of social dominance within the elephant social hierarchy.

T 4: Free contact: a prohibited management system

Captive elephants shall not be managed under free contact management as defined in T 3.

Cross-reference: "Optimal Conditions" **4.23** and **4.24**.

Note: We recognize that sound implementation of any training system depends upon the skill, temperament, education and judgment of each handler. Although free contact can include regular use of positive reinforcement, Leach writes, "It does not meet the criteria of a Best Practice because of its basic reliance on techniques such as punishment and negative reinforcement. For best results, these aversive techniques are contra-indicated in the sciences of animal learning and motivation (Bolles 1975), behavior management (Baldwin and Baldwin 1986) and aggression management (Leach 1992)." The variable and sometimes paradoxical effects of punishment have been documented by behavior scientists in a huge body of work beginning with Thorndike's (1932) seminal work. A few of the many documented side effects associated with negative reinforcement and physical punishment are increased aggression, anxiety and distress. Both negative reinforcement and physical punishment are subject to misuse and potential abuse, whether in frequency or intensity (Gershoff 1997).

B. Operant conditioning options

T 5: Positive reinforcement: definition and example

Definition: Positive reinforcement *increases* the probability of a behavior recurring by presenting the animal with a desirable stimulus following performance of a correct behavioral response. A desirable stimulus includes, but is not limited to: food, praise, tactile contact, play, favorite toy or release to a favored place.

Example: An elephant responds to a signal correctly by lifting his front foot, and is rewarded with tactile praise and a handful of carrots.

Cross-reference: "Optimal Conditions" **4.25**.

T 6: Positive reinforcement: implementation

Positive reinforcement shall be the primary basis for all captive elephant training and management.

Cross-reference: "Optimal Conditions" **4.25**.

Note: Positive reinforcement allows the animal to cooperate voluntarily. An animal trained exclusively with positive reinforcement will not experience anxiety or fear associated with the training and is more likely to try new behaviors (Pryor 1985; Martin 1996). Positive-reinforcement training affords additional benefits to the subject animal. Several benefits of positive reinforcement have been noted in the literature, including: increased mental stimulation, an opportunity to work for food and greater choice and control over daily events (Laule & Desmond 1998). All of these factors have been associated with enhanced psychological well-being (Hanson, Larson & Snowdon 1976; Markowitz 1982; Minetka, Gunnar & Champoux 1986). It may also improve the relationship between people and the animals in their care (Segerson & Laule 1995; Bloomsmith, Lambeth, Stone & Laule 1997). Documented results with chimpanzees have shown reduced self-directed behaviors, increased activity and enhanced social interactions (Bloomsmith 1992).

T 7: Negative reinforcement: definition and example

Definition: Negative reinforcement *increases* the probability of a behavior recurring by removing an aversive or unpleasant stimulus; this is also known as escape or avoidance training. Negative reinforcers are any undesirable event or stimulus, no matter how mild, that the subject wants to avoid. An undesirable stimulus or event may include a loud buzzer, spray from a hose or use of an ankus.

Example: When a keeper cues an elephant under her leg with an ankus, the elephant learns to lift her foot up promptly to escape or avoid the discomfort of the ankus point.

Cross-reference: "Optimal Conditions" **4.24**.

T 8: Negative reinforcement: implementation

Negative reinforcement shall be used at a minimum and only after all positive reinforcement alternatives have been exhausted.

Cross-reference: "Optimal Conditions" **4.24**.

Note: Negative reinforcement is subject to misuse, either in frequency or intensity of its application (Pryor 1985; Chance 1994). Because negative reinforcement necessarily involves the infliction of discomfort or pain on the animal, it is inconsistent with a trusting and respectful relationship between keeper and animal. Pain and discomfort are associated with stress, which "is undesirable because it has a potential harmful impact on all aspects of animal health" (Baer 1998, p. 279).

T 9: Physical punishment: definition and example

Definition: Physical punishment is the instrumental application of pain or other physical discomfort intended to reduce the occurrence of a behavior.

Example: An elephant reaches her trunk through the cables towards the keeper and is hit with an ankus, at which time she withdraws her trunk. Another form of physical punishment is the withholding of food or water for the purpose of managing behavior.

T 10: Physical punishment: a prohibited method

Physical punishment is prohibited in protected contact. Withholding food or water is

prohibited in any management system.

Cross-reference: "Optimal Conditions" **4.24.**

Note: The instrumental application of punishment may, paradoxically, strengthen the behavior the trainer seeks to reduce. Physical punishment of animals is linked to a variety of undesirable consequences such as escalating aggression against other animals or the trainer (Chance 1994). Other examples of undesirable effects include: the animal ceases the undesired behavior but replaces it with another potentially undesirable behavior; the animal learns not to perform the behavior in the presence of the trainer (Pryor 1985); or the subject tries to avoid the training/learning session itself (Baldwin & Baldwin 1986). A side effect to staff can be desensitization to punishment procedures as well, resulting in tolerance to cruelty (Leach 1992).

T 11: Time-outs: definition and example

Definition: A time-out is a form of non-physical punishment designed to reduce the occurrence of a behavior. In a time-out, positive reinforcement and/or the opportunity for positive reinforcement is withheld for a brief period of time immediately following an inappropriate or undesirable response.

Example: During a training session the elephant continues to break from position. Upon the third occurrence, the trainer immediately picks up the bucket of treats and walks a short distance away, stopping with his/her back toward the elephant. After a minute or two and when the elephant is back in position and waiting, the trainer returns and begins the session again.

T 12: Time-outs: implementation

When used appropriately and in moderation, a time-out is an acceptable form of punishment for use in elephant training and management (Desmond & Laule 1991).

Note: A time-out is distinct from physical punishment in its form, duration and impact on the animal. It is an action taken by the trainer that is designed to 1) signal that the elephant's behavior is inappropriate; 2) regain the elephant's attention and cooperation; and 3) give the trainer time to determine why the animal is misbehaving and adjust the technique to optimize success. Duration of a time-out is flexible, but must be short enough (such as 10 minutes at most) to maintain, and ideally heighten, the animal's interest in returning to the training process. A time-out is finite in that once ended, the training session resumes with no further repercussions to the elephant, such as withholding normal food rewards. A time-out is not a form of food deprivation, nor does it inflict pain or physical discomfort on the animal (Laule, pers. comm. Feb. 12, 2005).

C. Protected contact: training tools and techniques

T 13: Tools

a. Trainers shall use targets of varying lengths to shape new behavior, position the elephant, move the elephant and station the elephant. Targets are defined as a point of reference that the animal moves towards; targets may be moveable or stationary.

b. Trainers shall use a conditioned reinforcement, or bridge, such as a whistle or clicker

in the training and routine management of the elephants to reinforce behavior, to provide information about an acceptable response, to maintain the quality of behavioral responses and to implement other techniques such as desensitization.

c. Primary reinforcement in the form of behavioral opportunities or food such as fruits, vegetables, chows, grains, pellets, hay, etc., shall be provided to the elephant during training sessions and to reinforce cooperation in daily management activities. Food utilized as reinforcement can be part of the daily diet, extra treats and/or enrichment items.

T 14: Prohibited tools

The following tools are prohibited for use in a protected contact training system:

a. Ankus.

b. Electric prod or similar devices.

c. Any other objects used to hit, poke, prod or coerce the elephant.

Cross-reference: "Optimal Conditions" **4.23** and **4.24**.

T 15: Training methods

a. Trainers and managers shall be familiar with operant conditioning terms and techniques, and shall be capable of skillfully implementing recognized training techniques that are appropriate to a positive reinforcement-based system, including, but not limited to: successive approximation or shaping; desensitization; habituation; capturing behavior; selective reinforcement, etc.

b. Trainers and managers shall be familiar with and capable of skillfully implementing the following techniques for addressing misbehavior, and reducing or eliminating unwanted or inappropriate behavior: time-out; extinction; and/or incompatible behavior, each in combination with selective reinforcement.

T 16: Prohibited training methods

The following methods are prohibited in a protected contact training system:

a. Use of physical punishment.

b. Food or water deprivation.

c. Instrumental use of electricity.

d. Use of any objects to hit, poke, prod or coerce the elephant.

e. Dependence upon or regular use of negative reinforcement.

Cross-reference: "Optimal Conditions" **4.22-4.25**.

T 17: Training facilities

The implementation of protected contact requires facilities that provide adequate and appropriate access to all elephants at all times. Facilities must provide safe access to all parts of an elephant's body for husbandry and veterinary purposes. See **Part 2, E 6: Keeper/staff access.**

Part 8: Best practices for institutional program protocols

Gail Laule, M.A., Margaret Whittaker and Anita Schanberger

A. Elephant management program requirements

IP 1: Husbandry training

All elephants must be trained to voluntarily cooperate in the following procedures:

a. Overall body exam including eyes, ears, mouth, trunk, teeth, tusks, legs, feet, sides, back, abdomen, tail, genitals and rectum.

b. Skin care, inspection, cleaning and maintenance.

c. Foot care, inspection, cleaning, trimming, maintenance, radiographs and other necessary treatments.

d. Collection of blood, urine, feces, saliva and temporal gland secretion.

e. Injections, oral medications, trunk wash, ultrasound, insertion of catheters, urogenital exams and other medical procedures that are not too invasive or painful as to preclude voluntary cooperation.

f. Collection of morphometric data including weight, height and length.

IP 2: Restraint

The ability to restrain an elephant in certain situations is an integral part of appropriate care and management. Acceptable restraint methods for elephants are: short-term chaining of one to four legs, and the use of a restraint chute or Elephant Restraint Device (ERD).

a. Elephants shall be trained to enter a restraint chute calmly, and remain there voluntarily and reliably, so that husbandry, veterinary and other procedures may be conducted in a safe and efficient manner.

b. Chaining is acceptable only as a method of temporary restraint—e.g., one hour (Fowler 2001).

c. Elephants shall be trained to cooperate voluntarily in chaining of one to four legs so that veterinary and other procedures may be conducted in a safe and efficient manner.

d. Prolonged chaining (e.g., overnight chaining) must not be used to address facility limitations, conduct routine husbandry behaviors, implement social management, allow introductions of adults, enforce behavior modification or as a form of punishment.

IP 3: Social management and introductions

Elephants live in complex social structures and exhibit a broad range of socially driven behaviors and interactions. Therefore, it is the responsibility of any elephant management system to insure that all members of the group are able to live within the social structure while insuring that their physical and psychological needs are met.

a. Elephant staff must have the experience and expertise necessary to manage elephants successfully in existing social groups.

b. Elephant staff must have the experience and expertise necessary to implement introductions and carry out social integration.

c. Experience and expertise includes but is not limited to: ability to assess existing and potential compatibility of elephants; ability to intervene and address social problems such as excessive dominance-based aggression; and ability to implement progressive training techniques, rather than reliance on physical restraint or separation to manage social behavior and implement the introduction process.

Note: Integration is defined as the process of implementing formal introductions of an unfamiliar animal or animals to one or more animals in an existing social unit. The process continues until a reasonably stable social hierarchy is established and all animals in the newly formed social unit display an acceptable and appropriate range of species-typical social behaviors, including both affiliative and agonistic behaviors.

B. Staff training and expertise

IP 4: Elephant manager

a. Every elephant program must have a qualified elephant manager with at least five years experience working with elephants. This individual is responsible for: 1) staff training; 2) oversight of animal training; 3) insuring program adherence to Best Practices as defined herein; and 4) oversight of development and implementation of the overall elephant management program.

b. The elephant manager shall be familiar with the guidelines set forth in these Best Practices.

c. The elephant manager shall be familiar with (if still in a free contact program) or experienced in protected contact elephant management as defined in **Part 8, T 1.**

d. The elephant manager shall be responsible for the development of written protocols for the training, implementation and maintenance of husbandry and veterinary behaviors and restraint, including chaining and use of the ERD; the manager shall also be responsible for the social management of the existing group and for the introduction and integration process of new elephants to the existing group.

e. The elephant manager shall be responsible for insuring that staff adheres to the rules of keeper safety.

f. The elephant manager shall insure that all documentation and record-keeping is

current and complies with the requirements of **Part 8, C.**

IP 5: Keeper staff

a. The number of keeper staff shall be sufficient to insure that there are always two keepers present when any activities are being conducted with an elephant.

b. Keeper staff shall be familiar with the guidelines set forth in these model best practices.

c. Keeper staff shall be provided appropriate training in elephant management techniques to insure their development as competent trainers and handlers.

d. Keeper staff shall be provided all written protocols defined in **Part 8, IP 4(d)** and shall become familiar with and have full understanding of these protocols.

e. Keeper staff shall be provided with written protocols for keeper safety and shall become familiar with, have full understanding of, and be capable and responsible for adhering to these protocols.

f. Keeper staff shall keep accurate documentation and records on all elephants, in compliance with the requirements of **Part 8, C.**

C. Documentation and record keeping

IP 6: Record keeping

Every elephant program must maintain the following written protocols, documentation and records:

a. Programmatic policies for elephant training and management.

b. Written behavioral profile for each elephant that is updated annually (AZA 2003).

c. Written protocols for behaviors defined in **Part 8, IP 4(d)**.

d. Written protocols for keeper safety.

e. Emergency response protocol.

f. Written daily exercise program for each individual animal (AZA 2003).

g. Written environmental enrichment plan, schedule for enrichment (weekly or monthly) and assessment of enrichment activities.

h. Incident reports of any cases in which elephants show aggression towards keepers or the public, regardless if any injury actually results (AZA 2003).

i. Daily training records for each elephant.

j. Temporary records and/or charts to track specific behavioral problems or issues.

k. Daily behavioral, physiological and health records including, but not limited to musth data, reproductive behavior and developmental behaviors.

D. Safety

IP 7: Elephant rides prohibited

Offering elephant rides to the public is prohibited.

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