

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA

AMERICAN SOCIETY FOR THE)
PREVENTION OF CRUELTY TO)
ANIMALS, *et al.*,)

Plaintiffs,)

v.)

RINGLING BROS. AND BARNUM &)
BAILEY CIRCUS, *et al.*,)

Defendants.)

Case No. 1:03-cv-02006 (EGS/JMF)

DX 4

**EXHIBIT 4
TO
DEFENDANT'S MOTION FOR SUMMARY JUDGMENT**

Elephant Husbandry Resource Guide

Edited by Deborah Olson

This guide was made possible through the generous support of the following organizations

American Zoo and Aquarium Association Elephant Taxon Group



Elephant Managers Association



International Elephant Foundation



Elephants were brought to North America 200 years ago and almost immediately gained celebrity status. The same is true today. Elephants have become the flagship species in conservation programs around the globe.

Assessing welfare status is a growing area of concern as ethical questions are raised about the psychological and physical well-being of elephants maintained in North America. At the same time, populations of free-ranging elephants are diminishing, emphasizing the need for captive breeding programs, further scientific investigation, and a heightened level of conservation education focus.

Approximately 500 Asian and African elephants live in North America. Half of this population reside in AZA institutions and the other half of our North American elephants are owned by circuses, non-AZA zoos, private individuals, sanctuaries, and corporations. The *Elephant Husbandry Resource Guide* is an attempt to address the husbandry issues faced by all elephant managers, handlers, and owners represented by these different types of facilities. The authors stress that common sense should be used at all times and that individual facility differences and goals must be considered in conjunction with these guidelines. It is the authors' intent that each facility adopt—from the many options presented—a program that most fits the needs and physical capabilities of their facilities. At the same time the emphasis is on raising the standards of elephant care throughout North America.

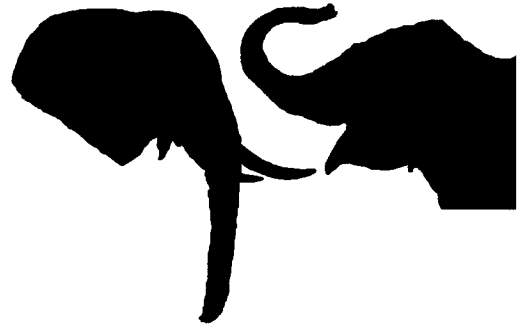
From the historical perspective of keeping both Asian and African elephants in North America, both species appear to share the same needs, therefore at this time these management and husbandry guidelines are for both species. Although many assumptions are based on the behavior of wild populations of elephants, it must be understood that the behavior and management of elephants in North America will be different and must be thought of in terms of restriction of space and intensive management versus the ability of the elephant to free-range. These different needs emphasize the importance of

assessing the training and management programs for elephants in human care and evaluating the adequacy of environmental and husbandry conditions to produce the optimal behavior, health, and reproduction in North American elephants.

A great deal of information was collected and a large number of people contributed to the preparation of this document. The authors accept that these guidelines are far from complete and encourage readers to seek more specific information that is available in the literature. The authors acknowledge that our attitudes of what elephants require may change with time. Elephant management is a dynamic process and will change as more is learned about elephants. Regular review of these guidelines will be necessary to incorporate advancements and information that will benefit the elephants and their handlers.

These guidelines recognize the established standards of the United States Department of Agriculture (USDA), Elephant Managers Association (EMA), American Association of Zoos and Aquariums (AZA), and the International Elephant Foundation (IEF) as they apply to elephants.

Preface



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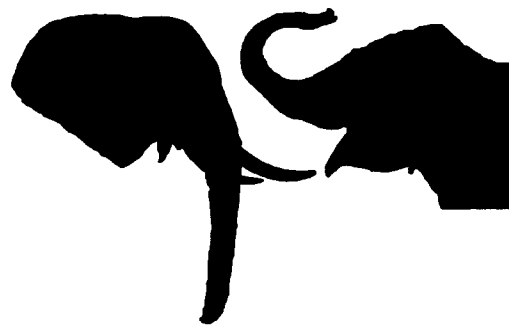
African and Asian elephants are two distinct species, which belong to separate genera. They are generally similar in size, appearance, physiology, and social behavior (Eltringham 1982; McKay 1973).

The African elephant is the largest land mammal with the Asian elephant coming in as a close second. Males are larger than females, and both sexes continue to grow throughout their entire lives. Some of the most unique features of both species of elephant are the ears, tusks, trunk, and feet. The African elephant has larger ears than the Asian. In both species the ears are used for communication—behavior (see Behavior Ethogram, p. 103) and auditory—and in regulating body temperature. The tusks are upper incisors that grow throughout the elephant’s life. Both male and female African elephants can have tusks, while it is usually only the male Asian which carries large tusks. The female Asian elephant’s tusks seldom extend beyond the upper lip. These tusks are called “tushes.” In both species, “tuskless” elephants have been observed.

Both the African and Asian elephant have trunks. The trunk is an elongated nose, the upper lip and nose combined. The elephant uses its trunk to breathe, explore its environment, communicate to and about conspecifics, pick up, push, carry, and to drink water or give itself a shower of water, mud, or dirt. It is essential to the survival of the elephant (although some elephants are able to successfully adapt their feeding and drinking behavior after severe trunk injuries). The tip of the trunk of the African elephant has two finger-like projections while the Asian elephant’s trunk tip has only one.

The feet of both species of elephants are round with a large circumference in relation to the legs. The elephant’s weight rests on a pad, which cushions the toes. This pad grows continuously and is worn down by the natural

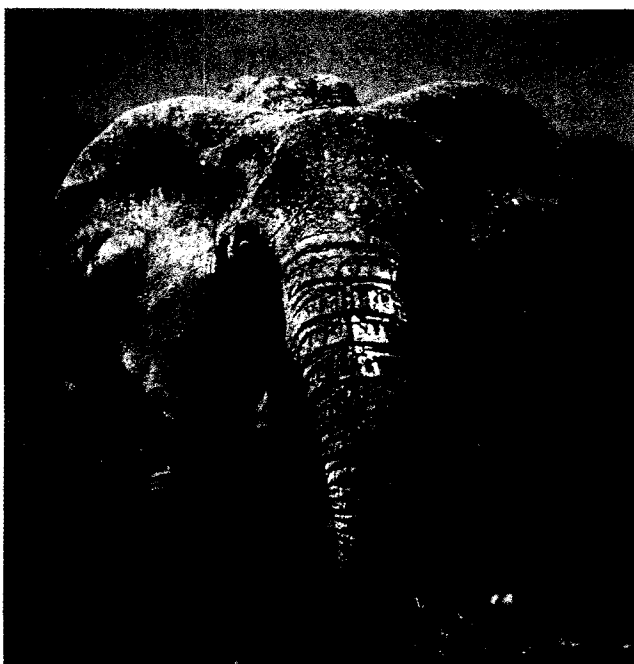
Natural History



movement of the elephant. The number of toenails on both species of elephants appears to vary from individual. (Csuti et al. 2001, Eltringham 1982). Typically Asian elephants have five toenails on each forefoot and four on each hindfoot. The African elephant has four toenails on each forefoot and three or four on each hindfoot.

The Asian elephant is considered to be a single species, *Elephas maximus* with four extant subspecies, *E.m. hirsutus* (Malayan elephant), *E.m. indicus* (Indian elephant), *E.m. maximus* (Sri Lankan elephant), and *E.m. sumatranus* (Sumatran elephant). The African elephant is considered to be a single species, *Loxodonta africana* with two subspecies, *L.a. cyclotis* (forest elephant) and *L.a. africana* (savanna elephant). Some recent genetic research has suggested that

continued on page 4



Jill Sampson

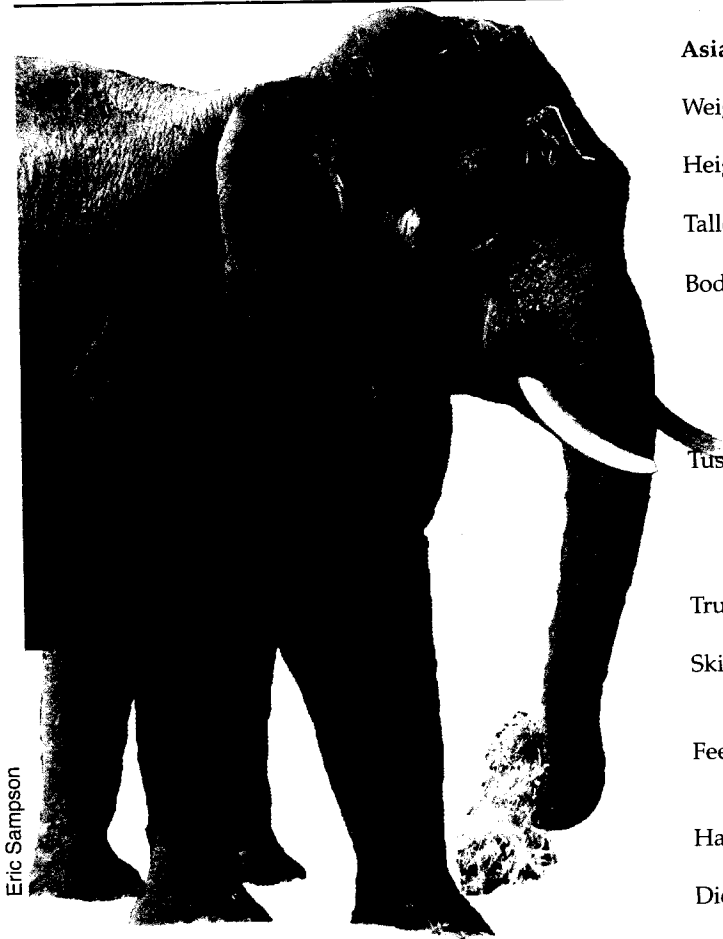
Savannah elephant of East Africa.



Heidi Riddle

Working elephant in Burma.

Comparison of the Two Elephant Species



Eric Sampson

Male Asian elephant.

Asian elephant (*Elephas maximus*)

Weight: 3-7 tons (6,000-14,000 lbs.)

Height: 7-12 feet

Tallest point: Top of the head

Body shape:

Back	Rounded
Belly	Level or slopes to middle
Head	Two domes
Ears	Small and rectangular

Tusks: Some males have large tusks. Females and some males have tusks called "tushes" which seldom extend beyond the upper lip.

Trunk: Tip of trunk has 1 finger-like projection

Skin: Lightly wrinkled with sparse hair over entire body

Feet: Usually have five toenails on each front foot and four on each rear foot

Habitat: Forest of Southeast Asia

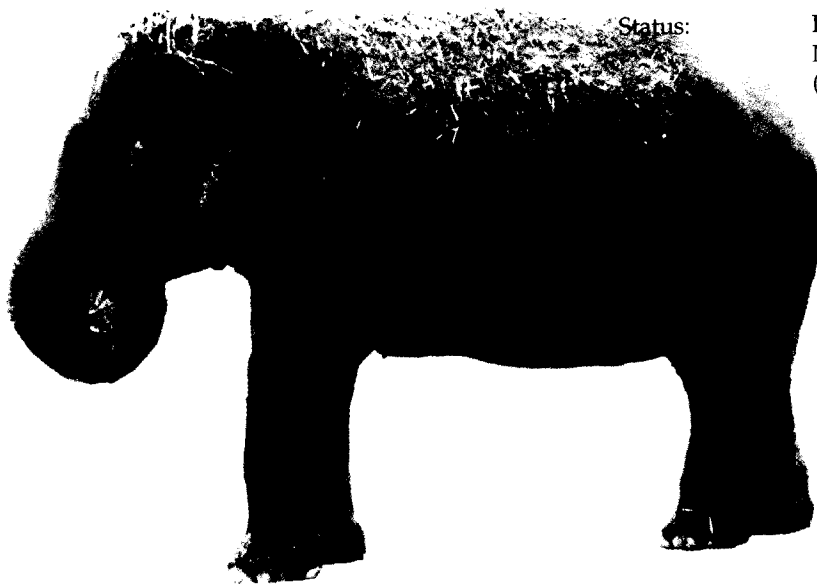
Diet: Primarily a browser

Social life: Female family groups. Adult males are solitary or form loose social relationships.

Gestation: 659 days ± 30 days

Interbirth interval: 3-5 years

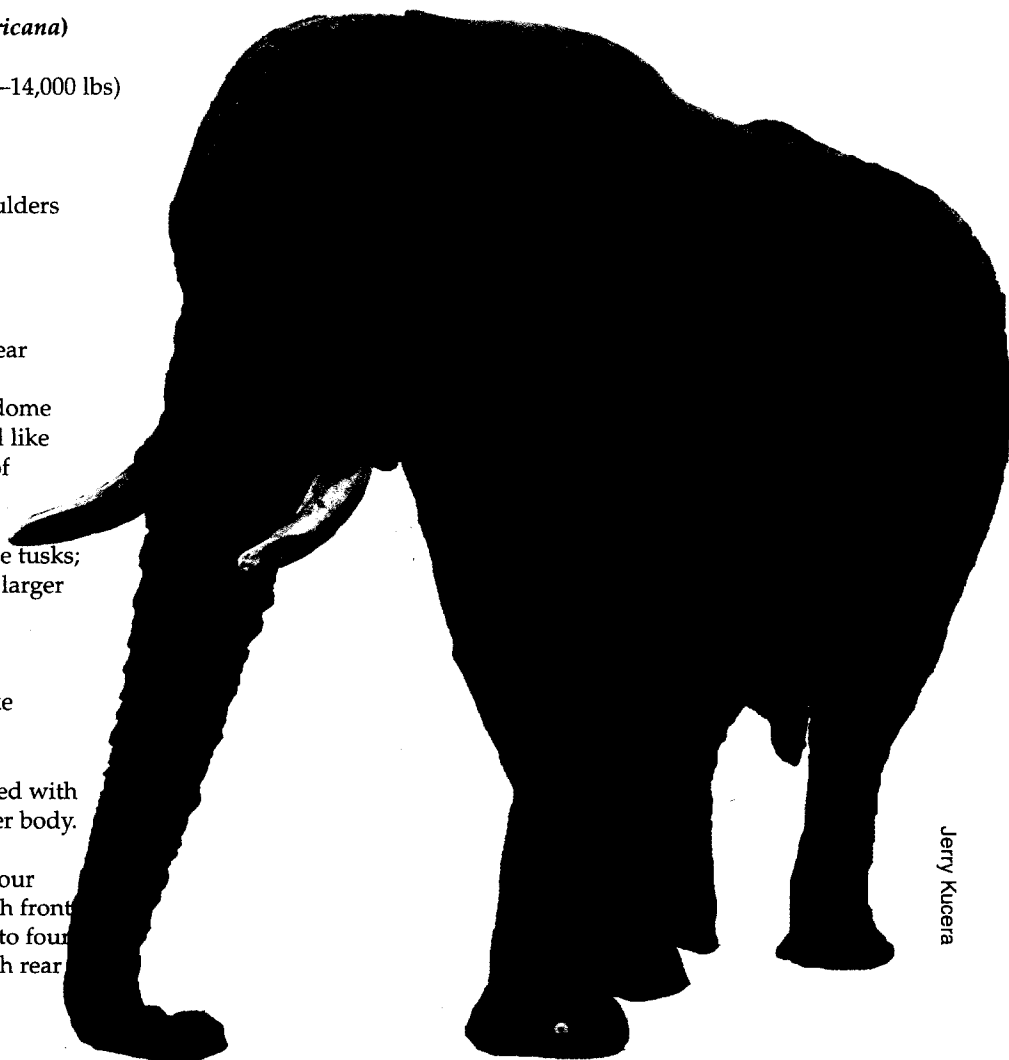
Status: Endangered due to loss of habitat. Numbers are currently around 30,000 (see map).



Female Asian elephant.

African elephant (*Loxodonta africana*)

- Weight: 4–7 tons (8,000–14,000 lbs)
- Height: 8–14 feet
- Tallest point: Top of the shoulders
- Body shape:
 - Back Concave
 - Belly Slopes down from front to rear legs
 - Head One rounded dome
 - Ears Large, “shaped like the continent of Africa”
- Tusks: Both sexes have tusks; male tusks are larger and heavier.
- Trunk: Tip of trunk has 2 finger-like projections.
- Skin: Deeply wrinkled with sparse hair over body.
- Feet: Usually have four toenails on each front foot and three to four toenails on each rear foot.
- Habitat: Grasslands, scrub, and forests of Africa.
- Diet: Primarily a grazer
- Social life: Female family groups
Adult males are solitary or form loose social relationships.
- Gestation: 659 days ± 30 days
- Interbirth interval: 3–5 years
- Status: Endangered/Threatened due to loss of habitat and poaching. Numbers are currently around 500,000 (see map).



Jerry Kuceira



Columbus Zoo

The forest elephant (*L. cyclotis*) shows more rounded ears than the savannah elephant (*L. africana*).

the forest elephant are genetically different from the savanna elephant and represent a separate species of elephant (Comstock et al. 2002). In the Statement on the Taxonomy of Extant *Loxodonta* published February 2002, the IUCN/SSC African Elephant Specialist Group recommends that further genetic and morphological research be conducted before dividing elephants from Africa into two separate species. Ongoing and future genetic studies of elephants throughout Africa will ultimately determine their classification.

Status of Wild Elephant Populations

Populations of both elephant species continue to decline in the wild. Human encroachment, habitat loss, and poaching pose major threats to the extant populations. Conflicts are frequent as the population of humans increases and suitable habitat for elephants decreases. Human or elephant fatalities are often the result.

Elephas maximus is listed as an endangered species with the United States Fish and Wildlife Service (USFW) and classified under Appendix I with the Convention for International Trade on Endangered Species (CITES). *E. maximus* once occurred from the Tigris-Euphrates in western Asia, east through Iran and south of the Himalayas; throughout south and southeast Asia including the islands of Sri Lanka, Sumatra and Borneo, and into mainland China northwards at least as far as the Changkiang (Yangtze river).

Elephants have disappeared entirely from western Asia, Iran, and most of China. They currently occur in the following regions and countries although they are usually restricted to hilly and mountainous areas: a) Indian sub-

Table 1. Current Estimates of Wild Populations of Asian Elephants.

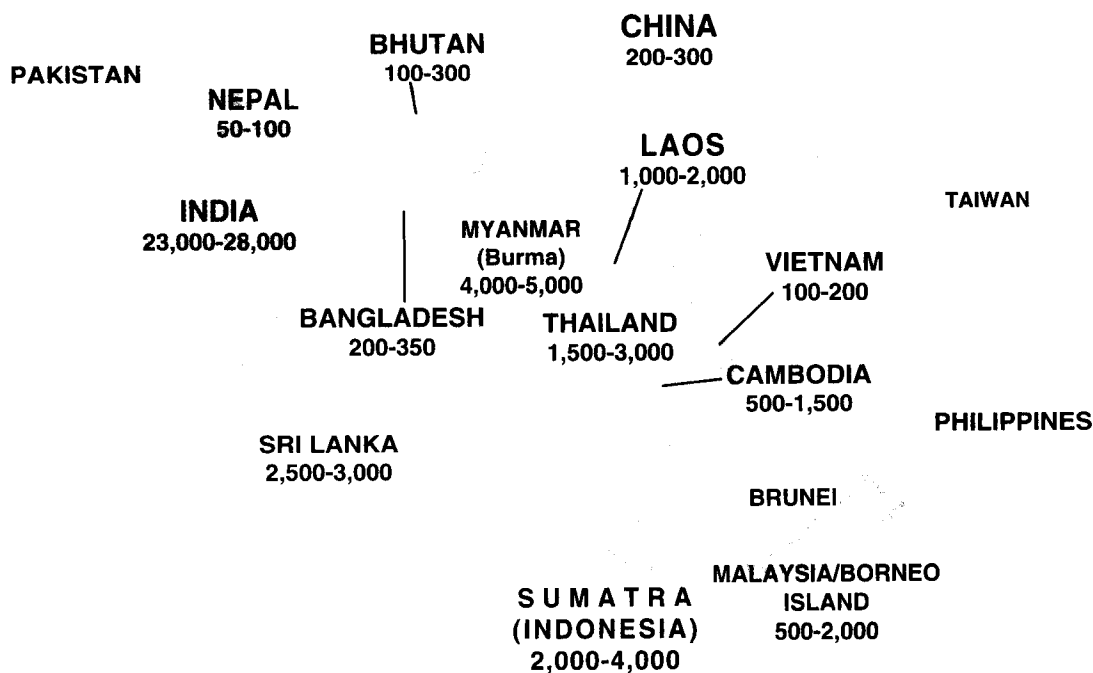
Country	Minimum	Maximum
Bhutan	60	150
Burma (Myanmar)	5,000	6,000
Cambodia	1,000	2,000
China	250	350
India	20,000	24,000
Indonesia	2,500	4,500
Lao PDR (Laos)	1,000	3,000
Malaysia – Peninsular	800	1,000
Borneo	500	2,000
Nepal	50	85
Sri Lanka	2,500	3,000
Thailand	1,500	3,000
Vietnam	300	400
Total	35,460	49,485

Sources: IUCN's SSC Asian Elephant Specialist Group

continent: India, Nepal, Bhutan and Bangladesh, b) Continental southeast Asia: China, Myanmar, Thailand, Cambodia, Laos, Vietnam, and Malaysia, c) Island Asia: Andaman Islands (India), Sri Lanka, Sumatra (Indonesia), and Borneo (Malaysia and Indonesia) (Sukumar 1994).

It is estimated that at the turn of the century there were more than 100,000 elephants in Asia (Santiapillai and Ramono 1992). The actual number of elephants found in the wild then and now can be only rough estimates. The surviving population of Asian elephants is estimated between 30,000–50,000, one-tenth of the population of

Asian elephant (*Elephas maximus*) populations and ranges



African elephants. The process of trying to systematically census the densely forested regions of Asia is extremely difficult. In many countries, unfavorable political conditions hamper or prevent census work. Current estimates of the wild populations are shown in Table 1.

The loss of habitat has been the primary reason for the decline of *E. maximus*. About 20 percent of the world's human population lives in or near the present range of the Asian elephant. With human numbers increasing at a rate of about 3 percent per annum in most countries, this could mean a doubling of the human population in 23 years. The elephants' forest home has been reduced to a fraction of its former range. India's extensive forests, where elephants roamed widely, now cover less than 20 percent of the country, and barely half of that is suitable habitat for elephants. The central India elephant population has been seriously fragmented. Thailand has cleared almost all its lowland forest, creating a huge void of wildlife habitat in the heart of the country. On the Indonesian island of Sumatra, vast areas of forest are being cleared to accommodate millions of people resettled from the crowded islands of Java, Bali, and Madura. Indo-China's forests were seriously damaged during 30 years of constant warfare. More forest land, however, has been cleared since the

The population numbers used for the African and Asian elephant range maps are from the African Elephant Research Foundation website: <http://www.african-elephant.org> 2/26/04 pp. 11-12 © 2000. The African elephant population estimates and distribution were compiled by Gary H. Matthews, Eleanor C. Mansueti, and Shoshani Janaki from 1979 data from 1970s censuses and more recent and updated figures of South Africa. The numbers indicate minimum and maximum elephant numbers in each country with a total ranging from 275,000 elephants. The minimum number for each country is a "generic" estimate and the maximum number is the sum of "definite," "probable," and "speculative" estimates from 1970s and 1990s. Asian elephant population estimates and distribution were compiled by Gary H. Matthews, Eleanor C. Mansueti, and Shoshani Janaki from data from a few countries and their local specialists and Charles Sussangkarn from 1970s and 1990s. The numbers provide a minimum and maximum estimate of Asian elephant within each country with a total of 30,200.

African elephant (*Loxodonta africana*) populations and ranges



Table 2. Current Estimated Wild Populations of African Elephants

Region	Definite	Probable	Possible	Speculative
Central Africa	7,322	27,104	30,027	63,469
Eastern Africa	82,357	24,111	18,772	1,495
Southern Africa	181,339	32,563	38,129	190
West Africa	2,309	824	6,408	3,442
Total	273,327	84,602	93,336	68,596

Source: Barnes et al. 1999

Vietnam War ended than during it. In Sri Lanka, the vast Mahaweli River Valley Project for settlement, crops, and irrigation cuts a wide swathe through the heart of elephant country. Myanmar (formally Burma), Cambodia, and Laos still have considerable forest cover, but this is suffering from unmanaged and unsustainable logging.

The fragmentation of the elephants' forest habitat is particularly deleterious. To find the best feeding areas, elephants migrate with the seasons. Now that migration routes have been disrupted and herds are confronted by new settlements and agriculture, conflicts with humans are inevitable. World Wildlife Fund estimates that there may be only 10 Asian elephant populations of more than 1,000 animals in the 13 countries where they are currently found (WCMC and WWF International 2001).

Other factors affecting the wild Asian elephant population include mortality during capture and poaching for ivory.

Loxodonta africana currently occur in sub-Saharan Africa, with the majority of the population living in the savanna of southern, western, and eastern Africa and the forest of the Democratic Republic of the Congo (Zaire) (Spinage 1994). Much of the extant population is fragmented by human activities disturbing traditional migratory routes. One of the highest projected human population growth in the next 25 years is expected in sub-Saharan Africa. The total fertility rate for African women remains high at nearly six live births per woman. To avoid malnutrition, sub-Saharan Africa will need to increase its food production three-fold, turning existing elephant habitat into cropland, exacerbating the problem of declining elephant populations and habitat fragmentation.

L. africana once ranged throughout Africa. By the middle ages, the species became extinct in northern Africa primarily due to the ivory trade (Scullard 1974).

Overhunting during the 18th and 19th centuries depleted elephant numbers in Southern Africa (Hall-Martin 1992). Controlled hunting, a drop in the price of ivory, and the development of wildlife preserves following World War I saw the population of elephants once again increase within Africa.

In the 1970s, the increase in the price of ivory reignited the poaching of elephants. The population, estimated to be

at about 1.3 million in the early 1970s, dropped by more than half by 1995. Due to uncontrolled poaching, in 1989 the African elephant was listed as Appendix I (endangered) by CITES which placed an international trade ban on elephants and elephant products. In 1997, the African elephant was downlisted to Appendix II in some southern African countries by CITES due to rebounding populations and protection programs. This remains the case today. Appendix II classifies these populations as threatened and allows some limited trade in elephant products with certain restrictions, quotas, and permits.

Currently, some elephant populations in Africa are still subject to poaching and being hunted for bushmeat. The forest elephant is particularly susceptible, increasingly so as the forests are being logged, attracting more people and making elephant habitat more accessible by building roads. In contrast, some African countries insist they have too many elephants. They demonstrate an excess of elephants by increased elephant-human conflicts and elephant-influenced habitat modification, which adversely affects population numbers of other species. These countries are looking for ways to reduce their elephant numbers through translocation programs, birth control, and culling.

Today the population is optimistically placed at near 500,000 but census analysis done by the IUCN African Elephant Specialist Group suggests the true numbers are lower. The group suggests that the estimates are misleading due to several factors influencing census work including the vast forests where elephants inhabit, political unrest in some of the range countries, and inconsistencies of survey methods. To better understand the wild numbers, the African Elephant Database 1995 describes five levels of survey types.

1. Aerial total counts and ground total counts where a definitive population can be considered.
2. Sample aerial counts and ground samples with 95 percent confidence limits where a lower (*definite*), *probable*, and higher (*possible*) number is derived from the sampling.
3. Dung counts with 95 percent confidence limits where no *definite* number is established due to the lack of direct observation, but dung inspection provides a *probable* figure and a higher *possible* figure.
4. Informed guesses where expert opinion along with other non-methodical survey systems provide a *possible* number or a *speculative* figure.
5. Other guesses where only *speculative* numbers are provided.

Based on these definitions, Table 2 summarizes the current estimated wild populations of African elephants.

can then ask for a previously learned behavior, cue if necessary, and reward the elephant's correct response. It takes very little time for the elephant to realize that doing behaviors in an ERD can be very rewarding. As in any elephant behavior training, goals should be clearly defined at the outset, and the handler must know how to proceed after each previous step is attained.

After the elephant feels secure entering and standing in the ERD on request, this behavior must be maintained. It is also important that the elephant be conditioned to remain in the ERD for extended periods of time. One easy means of accomplishing this is to feed the elephant in the ERD with the doors closed. The elephant soon associates the ERD experience as a rewarding one. It is also important to vary the timing of the ERD training. Establishing an ERD routine can facilitate baths, foot care, veterinary procedures, and other routine management activities.

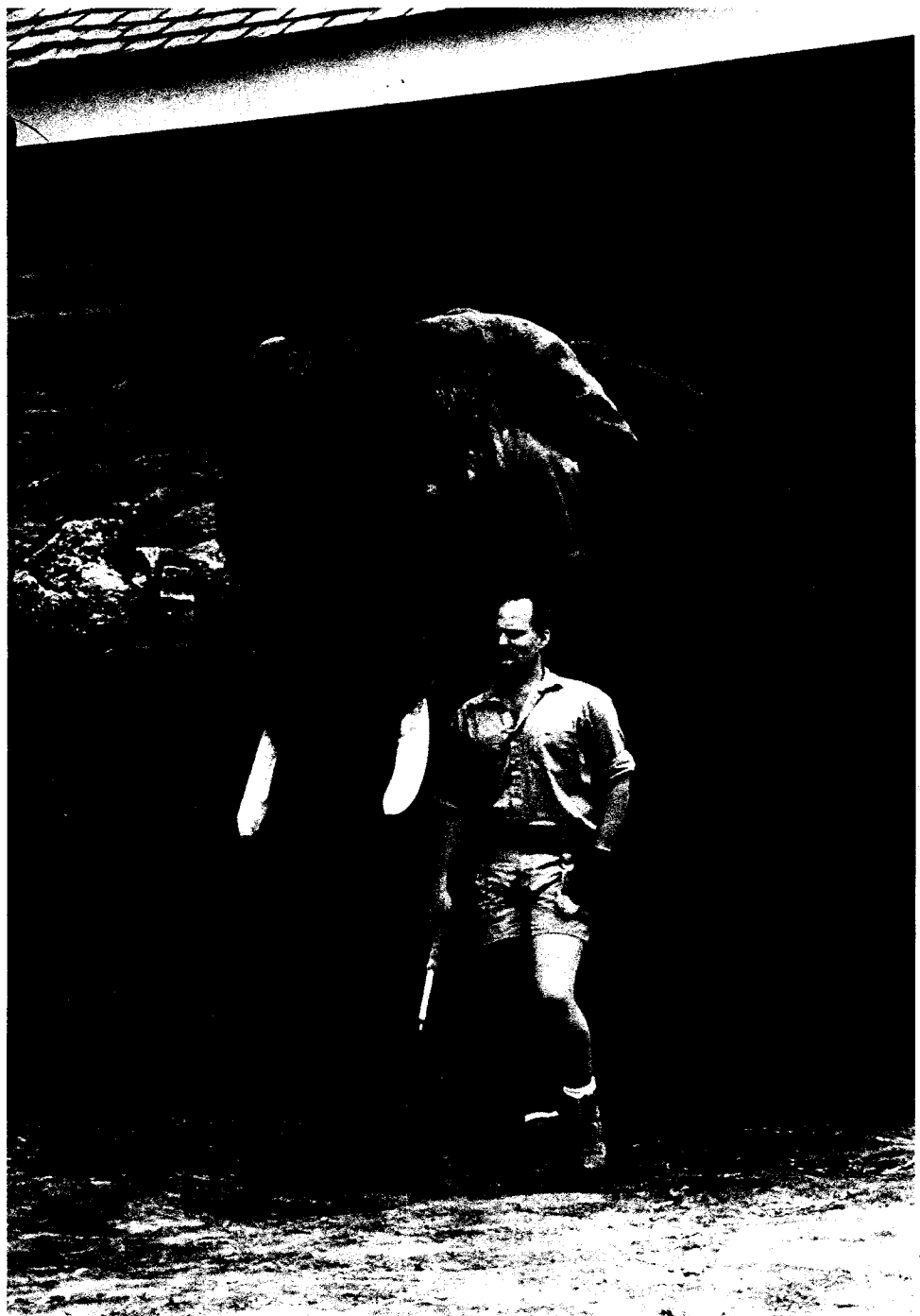
Guide

A guide is a tool used in the behavior modification of elephants. In the past in North America, the guide has been called an ankus or bullhook. Those names are outdated and do not provide an appropriate explanation for the proper use of the tool. The terminology has been changed for a number of reasons. Ankus is inappropriate as a descriptor as it is unclear where the term originated or what tool it actually represents as they vary throughout Asia. Most tools used in Asia to work with elephants do not resemble our guides, nor do most mahouts in Asia use the term ankus. A bullhook is also nondescriptive as to the tool's actual use and in fact is a misnomer; the

The ultimate goal of the elephant handler is to have the elephant respond on verbal commands alone, using the guide as little as possible.

term was coined more than 100 years ago by men who called all elephants, regardless of sex, bulls. Elephant management has evolved, and its tools and their uses have evolved as well. Evolution demands that our terminology change to keep up with the times. Flying machines are now called airplanes; iron horses are now called trains. It is not only necessary, but appropriate that the term guide be added to the elephant handler's vocabulary in place of the outdated, misunderstood, and misnamed ankus/bullhook.

The guide is a tool that is used to teach, guide, and direct the elephant into the proper position or to reinforce a command. This is accomplished by adding a physical cue to a verbal command. The ultimate goal of the elephant



Philadelphia Zoo

handler is to have the elephant respond to verbal commands alone, using the guide as little as possible.

The guide is used in many facilities throughout the elephant management continuum. The guide can be used to move the leg of the elephant closer to the straps of a restraint device, or indicate to the elephant to lean into the bars of the holding stall to allow greater access for the keeper standing outside of those bars. It is also used by the handler to teach an elephant to lift a leg, move forward, move backward, and the list goes on and on.

A guide consists of a hook (preferably stainless steel) mounted on one end of a fiberglass, wood, lexon, or nylon shaft. The design of the hook allows for the elephant to be cued with either a pushing or pulling motion. The ends on the hook are tapered to efficiently elicit the proper responses from the elephant with the handler exerting very little pressure. The ends of the hook should catch but not tear or penetrate into the skin. On a rare occasion, superficial skin marks may result but generally do not require medical attention.

On rare occasions, the shaft of the guide may be used as punishment after the elephant acts in an inappropriate or



Seneca Park Zoo, Sue DeFalco

The guide is a tool for teaching, guiding, and directing the elephant.

aggressive manner. Contact between the elephant and the shaft of the guide should be immediate, in response to the incorrect behavior, and should stop immediately upon the elephant demonstrating appropriate behavior (see Training, p. 21).

All new handlers should be instructed and knowledgeable in the proper use of the guide prior to working with an elephant so that the guide is not used improperly. As new handlers must learn the use of the guide, so must the elephant learn what is expected from the cues of the guide. An untrained elephant does not understand the "language" of the cues, similar to a dog that has not been taught to walk on a lead and pulls its owner.

Target

A target is used primarily, but not exclusively, when managing an elephant behind a barrier. It can be an effective method of moving an elephant to a specific location or positioning the elephant to a "mark" if the elephant is motivated. Multiple target poles can be used to position or direct the elephant to perform more complex behaviors.



Six Flags Marine World

The guide's design allows for the elephant to be cued with either a pushing or pulling motion



Houston Zoo, Anita Schanberger

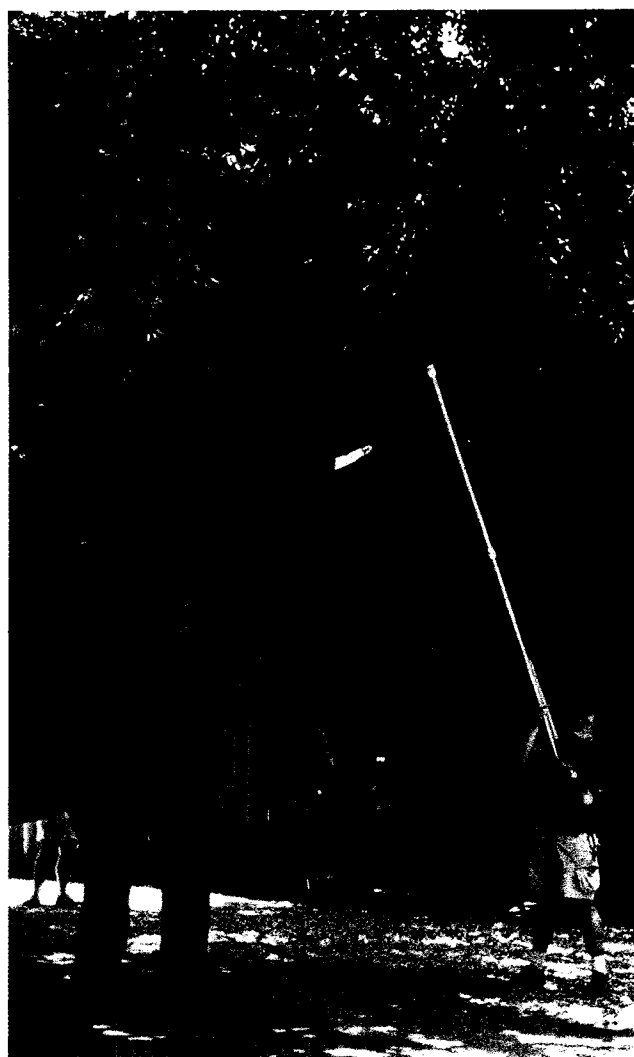
Above: A handler uses multiple targetpoles to position or direct an elephant. Right: A handler uses targets in a direct-contact setting.

A target can be any length and made of a number of different materials. Commonly, a bamboo pole or other lightweight material 8 to 10 feet in length is used to extend the handler's reach. Short target poles can be made of wooden sticks such as handles from rakes or brooms, or PVC pipe. On one end of the pole, a water buoy, bundle of rags or paper towels, or other such object is permanently fixed. Because the target can be grabbed and potentially consumed by the elephant, consideration should be given to the material selected to be used as the target.

Leg Restraints

Leg restraints or tethers are an acceptable and necessary tool in the management of captive elephants. Tethers provide a means to limit an elephant's movements and permit the safe handling of the elephant. Limiting the elephant's movement can facilitate foot work, feeding, veterinary procedures, elephant transports, elephant introductions, parturition, scientific investigation, training new handlers, training new behaviors, preventing fighting, protecting facilities, as well as fulfilling many other management and husbandry needs.

Tethering is just one component of an elephant management program. The decision to tether should take into



Zoo Atlanta, Eric Sampson

consideration the best interest of the elephant in the given circumstance. For instance, limiting the elephant's movement at night is a viable alternative to keeping elephants in single stall accommodations. Under normal circumstances, elephants should not be tethered continuously for more than 16 hours without exercise. Elephants under medical care or other special circumstances, such as a mother demonstrating aggressiveness towards her new baby, may require longer tethering periods.

When tethering an elephant is determined to be necessary, the elephant should be tethered by one front leg and the rear leg on the opposite side or, in short-term circumstances, by one front leg only. The tethers should be rotated on alternate legs every other night to prevent possible injury, and the elephant's legs should be inspected daily. In some situations, elephants should be tethered on all four legs, such as for transport, parturition, certain procedures in an elephant restraint device, etc.

Elephants should be tethered on a clean level surface, which preferably slopes to a drain. For short-term use, tethers can be made of rope or nylon straps. For long term or overnight use, chains are the preferred method of restraint. Tethers made of absorbable material must be

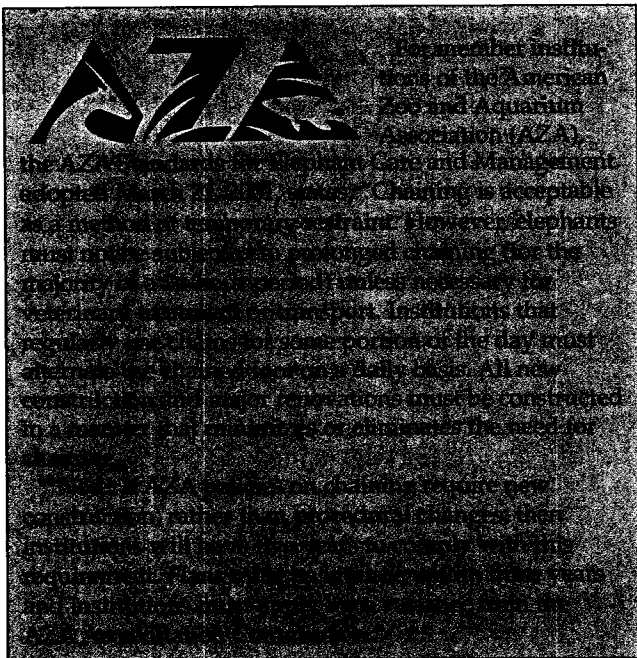


Seneca Park Zoo

**Right: Handlers secure the front leg tether.
Below: Handler secures the rear leg tether.**



Six Flags Marine World

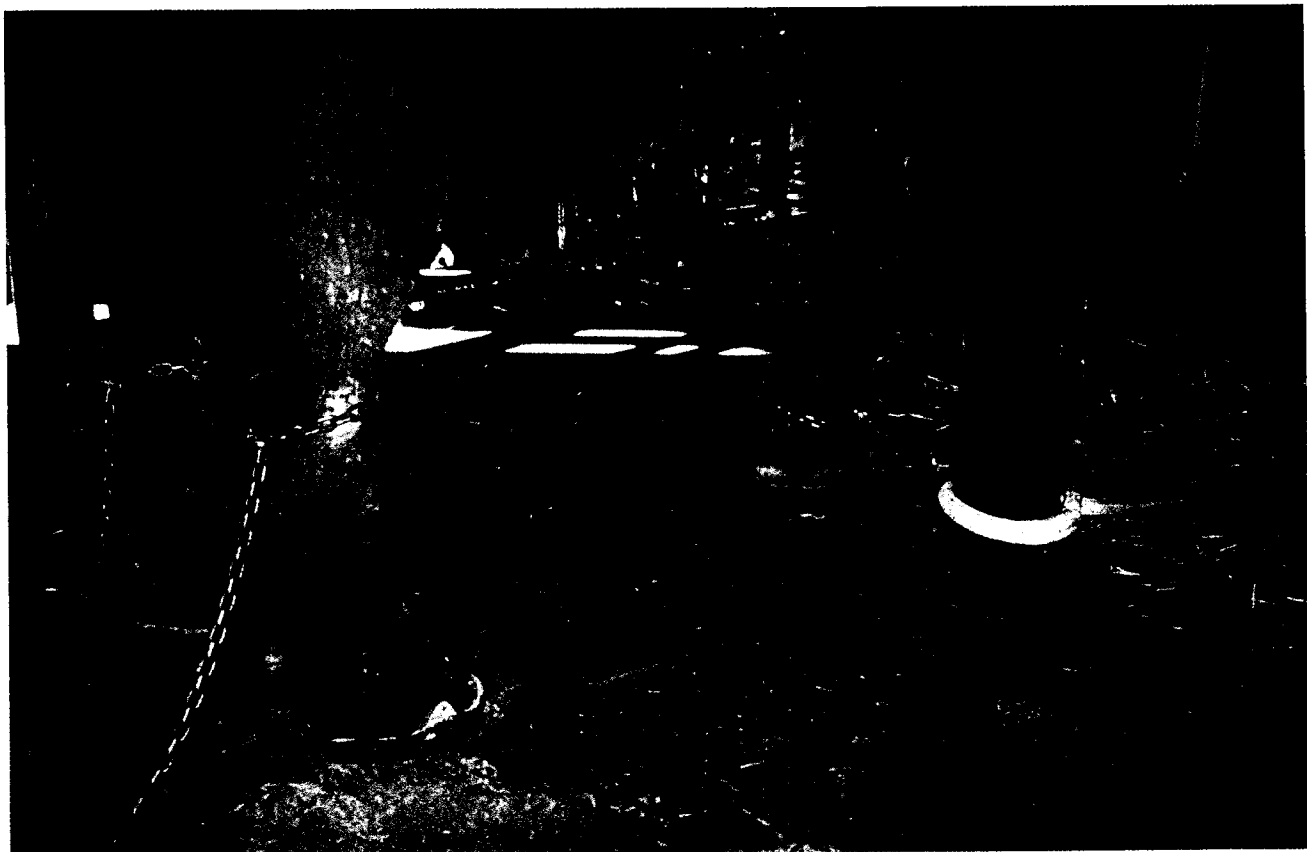


Indianapolis Zoo

Soft cotton rope used as restraint.

cleaned daily and given an opportunity to dry before their next use. The tethers should be long enough to allow the elephant to lie down and get to its feet easily, but not too long to allow the elephant to turn and become entangled in them.

Ropes are especially useful in limiting and guiding the direction of the elephant's movement. Ropes can be used to make hobbles to limit the movement of an elephant or a harness for a new baby being introduced to its mother for the first time. Ropes are often used when training an elephant and assisting an elephant that is unable to rise. Ropes used in elephant management should be of appropriate strength, thickness, and material so as to not cause



Example of chains and rope used together.

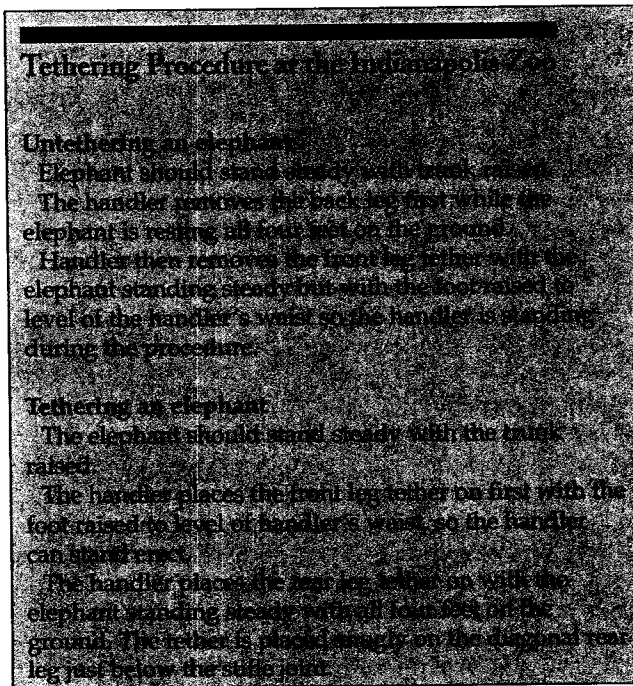
injury or abrasions under normal circumstances. Cotton braided, or natural fiber rope of 1 1/4" thickness, is often recommended but not in all cases.

Elephant handlers should be well-versed in the various and proper uses for ropes. It is also recommended that handlers be acquainted with rope splicing and knowledgeable about tying appropriate knots. For the protection of the elephant and handlers, a sharp knife should be on hand any time rope is used.

Elephant handlers should be well-informed about the types of chain and hardware used to tether an elephant, as well as appropriate chain construction and proper fit to the elephant's leg. The front leg chain should be loose on the foot below the ankle joint but with no chance of slipping off. The chain on the hind leg should fit snugly and be placed higher on the leg between the ankle and the knee (or stifle joint). Front leg bracelets are commonly connected using brummel hooks or clevises. Front leg chains should have at least one swivel added so the chain does not twist. Rear leg bracelets are usually connected with quick links, hooks, or clevises. Some facilities cover the leg bracelets with soft material such as rope or fire hose. Padded chains, straps of leather or nylon, or anklets made of cotton rope have all been used successfully, and are recommended for very young elephants and for extended periods of tethering of adult elephants.

All tethers should be checked routinely by the handlers, and any tethers showing signs of wear should be immediately replaced. Tethers need to be secured by rings imbedded in a concrete wall, floor, concrete "deadman," or other immovable anchor and placed about 18 feet apart. The placement of the rings, or attachment, is dependent on the enclosure and the facility's elephant management protocol. When acquiring the proper size chain and hardware, it is a good idea to check with a company specializing in hoisting or chaining equipment as not all chain is built for the amount of pressure an elephant can exert. The choice of what chain tensile strength to use should be based on the age, size, and weight of the individual elephant.

All facilities should develop a tethering protocol so that each elephant handler is familiar with the tethering procedure. This will ensure that the tethers are used correctly, efficiently, and humanely. For example, untethered and unsupervised elephants should not have access to tethered elephants as they can cause injury to their tethered stallmates. In addition, every handler in the



Tethering Procedure for the Hind Leg

Untethering an elephant
 Elephant should stand steady with trunk raised.
 The handler removes the back leg first while the elephant is resting all four feet on the ground.
 Handler then removes the front leg tether with the elephant standing steady with trunk raised to level of the handler's waist so the handler is standing during the procedure.

Tethering an elephant
 The elephant should stand steady with trunk raised.
 The handler places the front leg tether on first with the foot raised to level of handler's waist so the handler can maneuver.
 The handler places the rear leg tether on with the elephant standing steady with trunk raised to the ground. The tether is placed snugly on the diagonal rear leg just below the stifle joint.

facility should put all tethers on exactly the same way each time, that is, right to left, all hooks facing up, etc. In the case of an emergency, this reduces questions or mishandling of the hardware in tethering or untethering the elephant. For this reason, brummel hooks or similar closures are recommended over clevises that require pliers to get on and off.

Bolt Cutters

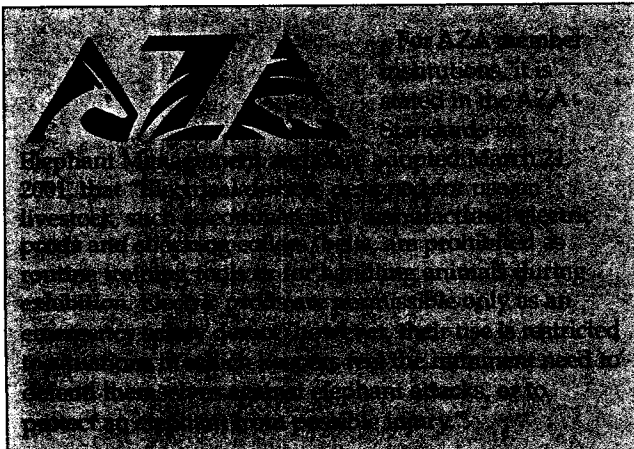
Bolt cutters of sufficient size and strength that are in good working order should be easily accessible to the elephant handlers at all times. Bolt cutters are invaluable when needing to free an elephant quickly from physical restraints or if entangled in cable fencing or electric wire.

Mechanical Assistance

There are a number of devices that aid handlers, especially in emergencies. These devices include a winch, come-a-long, and block and tackle. This equipment should be of sufficient size and strength to support an elephant, in good working order, and should be easily accessible to elephant handlers at all times. This equipment can help position an elephant, or assist in lifting an elephant that is sick or injured and unable to get to its feet by itself. It must be stressed that handlers lacking the knowledge or experience of using this type of equipment must get assistance in order to prevent injuries.

Electric Tools

The only form of electricity acceptable for use with managing elephants is a commercially manufactured cattle prod and electric fencing (see Facility Design, p. 75). The cattle prod should be used only for handler protection, or when the safety of the elephant is compromised, such as in fighting with another elephant. It is not appropriate that an



Weaning

Weaning is a necessary part of the elephant calf's natural maturation process, even if the calf is to remain with its mother long term. Ideally, four things should be in place before a calf is ready to wean:

1. The calf should be nutritionally independent from its mother. The calf should derive its nutritional needs from solid food, nursing only occasionally and primarily for comfort.
2. The calf should be sufficiently socialized with other elephants. Weaning should not occur in total isolation. It is a good idea to make sure the calf has been introduced to at least one other elephant that can serve as an "auntie."
3. The elephant calf should be emotionally independent. Initially, a young elephant is the shadow of its mother—tagging along very close to her side, too insecure to stray far. But as the calf becomes older, its curiosity gradually overcomes its fear, and its dependency on its mother diminishes. The calf is ready to wean when it spends a good deal of time away from its mother's side. Some calves are naturally more adventuresome than others, so this will happen at different rates.
4. The calf should be accustomed to the area it will be weaned.

It has been observed that the natural weaning process by the mother has been both gradual and abrupt. Both of these methods have been used successfully by elephant facilities in North America.

Rosamond Gifford Zoo at Burnet Park



Calves are eager to learn. Above: A young elephant performs tub work as part of a public demonstration. Right: A young bull works on a spindle.



Have Trunk Will Travel

Weaning in the elephant is marked by the change in digestive function from a simple monogastric to a more complex hindgut fermenter, capable of digesting plant material. This involves both modifications to the internal anatomy and alterations in the microbial flora within the intestines. This intestinal flora is obtained when the calves consume fresh feces of the adults. Calves are introduced to solid food by sampling food dropped by the mother within the first few months of life and are consuming grain and plant material by 6 months of age. This begins to end the dependence on nursing from the mother for nutrition and, under normal conditions, begins the cessation of the nursing process.

Separation and weaning of young domestic animals is a common practice in order to keep the dam in good health and reproductive condition, to increase her nutrition, and improve the growth of the young. Most young initially object to the weaning process (even when it is done naturally by the mother) but quickly lose their attachment and need for their mother. Elephant calves are no exception. Weaning is a necessary and acceptable process in captive elephant management.

Weaning is a gradual process and not a single event. Although the dependency on nursing should be extinguished over time, the calf's nursing behavior and social dependency on its mother may not decrease as expected. Unnatural bonding between mother and calf can occur in a captive setting if the calf is not socially integrated with other elephants, or the limits to the enclosure encourage constant contact between mother and calf. This reduces the natural activity of the young wandering from its mother and becoming more independent with age. Maturing calves that are socially integrated with multiple females usually spend less time with their mother and more time with peers or females assuming the role of "aunties." Each elephant calf is different though, and whether the mother weans the calf herself or human caretakers do it, separa-

tion and weaning of young elephants may be necessary even if it is planned to keep the calf with the mother for its entire life.

The elephant management staff, with input from the veterinary care staff, will assess the best age to wean a particular calf based on the health of the calf, its personality, and the mother's behavior toward it. An indication that a calf may be ready for weaning is when the calf has a fecal consistency of an adult. At this time calves do not rely on nursing for their nutritional needs but more on solid foods, and can safely be weaned. The mother may also indicate the best time to wean a calf by an increasing lack of tolerance toward it. Captive elephant calves have been successfully weaned at 6 months of age, but that is thought to be the extreme. Most elephant breeders believe weaning is best to occur between 2 and 3 years of age.

It is important to understand that weaning is the separation of the calf from the mother to reduce and ultimately stop nursing behavior and abnormal social dependency. Weaning does not mean a complete separation from all elephants. It is important to provide both the calf and the mother with companion elephants during separation periods.

The weaning process needs to be properly planned by the elephant management staff and the veterinary care staff before any part of the process is started. Decisions must be made as to whether the mother and a companion will be removed from the calf and the rest of the herd or whether the calf and a companion will be removed. Separation and weaning of a calf can be done in many different ways, but it is labor intensive, requires continuous evaluation of the process, and demands good facility design and competent staff. For elephant calves that have been conditioned to some separation while they were still very young, lengthening the period of time the calf is away from its mother until the youngster is completely independent from its mother is a straightforward process.