Animals & Society Institute

ELEPHANTS IN CIRCUSES:
ANALYSIS of PRACTICE, POLICY, and FUTURE

POLICY PAPER

Compares healthcare of elephants in US entertainment industries with current scientific knowledge to assess the effectiveness of elephant welfare regulation, law, and commercial practice

G. A. Bradshaw

Animals and Society Institute

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The Animals and Society Institute is an independent research and educational organization that advances the status of animals in public policy and promotes the study of human-animal relationships. We are a think tank as well as a producer of educational resources, publications and events. Our objectives are to promote new and stricter animal protection laws, stop the cycle of violence between animal cruelty and human abuse, and learn more about our complex relationship with animals.

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Executive Summary

The use of African and Asian elephants for display and entertainment has been a common practice in the United States since the mid-19th century. Images of costumed elephants in circuses evoke quintessential Americana and childhood nostalgia. Indeed, zoo and circus visits are the most frequent occasions by which North Americans encounter a living elephant face to face.[1]

But today, the confinement of exotic animals is hotly contested. Although zoo and circus owners claim that captive animals provide educational benefits, neither institution holds the same place in American culture as it once did.[2,3] Times, knowledge, and interests have changed, with the result that circuses' "educative power and its ability to capitalize on novelty have been eclipsed by other media."[3]

Once cultural icons, elephants in captivity are the focus of increasing debate regarding the regulation of their care and well-being. This attitudinal shift has come about because of growing public concern for animal rights and welfare; changes in public perceptions of zoos and circuses; the precarious status of free-ranging elephants; and new scientific models and data indicating that captive environments are inadequate for providing and supporting elephant needs.

Based on current scientific understanding, this paper examines the health and care of elephants in the entertainment industries in the United States, and provides specific recommendations to inform elephant welfare regulation and law. Two questions are addressed here: What does science tell us with regard to elephant health and well-being under conditions of captivity? And what do these results imply for existing regulations? Conclusions based on this inquiry indicate that because of the severe detrimental physical and psychological effects of confinement and training, practices of captive breeding and wild-capture need to desist, and elephants kept in close confinement captivity are best served by transfer to accredited sanctuaries.

2. Scope of Inference, Assumptions, and Terminology

Policy and law are generally shaped by two main factors: public opinion and state of knowledge. Assessing public opinion is in itself somewhat difficult. Many vital statistics, such as an accurate estimate of circus-goers, elephant health, and public opinion polls, have been collected by what can be considered biased sources. Criticism is levied against both circus management and animal welfare organizations for their lack of objectivity because each has vested interests in specific outcomes of any analysis. For this reason, arbiters often turn to science to address concerns about the validity of "gray" or "special interest" literature. This analysis therefore confines its purview largely within the realm of peer-reviewed science, except when such material and data is originally derived from public records.

Elephants in circuses and the entertainment industry as a whole are the focus of discussion, but the analysis and conclusions also relate to zoos for several reasons. Although important differences exist, close-confinement captivity and issues related to elephant health and well-being are shared institutionally.[3] As do circuses, zoos use elephants to attract visitors, and although less common now, zoos have trained elephants to perform and have employed many similar methods of control. Practices such as elephant procurement, care, treatment, and the rationale for captivity are shared, and there is an exchange of "surplus" elephants and personnel between zoos and circuses.

In this text, the term "captivity" is used to refer to "close-confinement captivity" in contrast with "free-agency captivity." The latter refers to captive conditions illustrated at two American sanctuaries, The Elephant Sanctuary in Tennessee and the Performing Animal Welfare Society in California, where elephant residents are provided with expansive natural settings and caretaker personnel employ "passive control" in lieu of physical domination.

The terms "free-ranging" and "wild" are used interchangeably to denote conditions and behaviors consistent with elephant life prior to colonial settlement in Africa and Asia. "Elephant" refers to both Asian (*Elephas maximus*) and African (*Loxodonta africanus*) species because the level

of analysis is considered equally applicable to both. Finally, this paper will refer to “elephants in captivity” rather than “captive elephants” to acknowledge that the animals are not defined by their circumstances but affected by them. This contradicts past arguments that have insisted on considering elephants in captivity as separate from their counterparts in the wild. As will be discussed later, an ecological and ethological framing renders this distinction artificial, not definitional.[4]

3. Elephants in American Circuses

The first elephant known to be brought to the United States was imported from Bengal at less than 3 years of age in 1796 by Jacob Crowningshield. However, it wasn't until 1808, when a young African elephant was purchased and exhibited by farmer Hachaliah Bailey in 1804, that elephants became routinely imported. Unfortunately, like many captured elephants brought to North America, Bailey's elephant, Old Bet, died early in life; she was shot to death in 1816. Her successor, Little Bet, was the first captive elephant taught to do tricks, but she too was shot to death.[5] Barnum funded an expedition to Ceylon (now Sri Lanka) in 1850 to buy elephants. When direct purchase failed, Barnum tracked down and caught 10 wild elephants.[1,3]

Traveling menageries became very popular in the early 1800s. By the mid-1800s they combined with circuses, with Barnum competing with other shows for audiences and bragging rights. In 1882, Barnum purchased a huge African elephant named Jumbo from the London Zoo, and used him to great success to attract business before Jumbo was killed by a freight train in 1885. After Barnum's death in 1891, his circus menagerie was purchased by the rival Ringling Brothers show, forming the Ringling Bros. and Barnum & Bailey Circus that today is owned by Feld Entertainment.[6]

In 20th century America, elephants were a sensation comparable to the hula hoop and Harry Potter. By 1952, there were 264 elephants in the United States—124 in circuses and the rest in zoos. Of those, only six were male (because of their larger size and volatility after sexual maturity, male elephants are much more difficult to manage in captivity)[7] At the same time, elephants became increasingly more common in zoos. Today, one out of three Asian elephants lives in captivity (more than 14, 000 worldwide),[8] and there are approximately 600 elephants kept captive in North America inclusive of both species.

Pressures to expand captive breeding programs have increased.[9] The Center for Elephant Conservation was established in 1995 by Ringling Bros. and Barnum & Bailey Circus in Polk City, Florida, as a private breeding facility designed to increase captive populations. Other

breeding facilities include Indianapolis Zoo, Houston Zoo, St. Louis Zoo, Dickerson Park Zoo Rosamond Gifford Zoo, Oregon Zoo, Disney's Animal Kingdom, and San Diego Wild Animal Park. Captive breeding programs have, by the admission of proponents themselves, been extremely poor (for reasons discussed below).[10]

Circuses have enjoyed a loyal following for decades, but overall attendance numbers have decreased significantly since their heyday.[1,3] Both the Ringling Bros. and the Clyde Beatty circuses nearly went out of business in the 1960s, when Feld Entertainment revived its market by taking its circus to indoor arenas.[6] Many circuses have dropped animal shows from their programs, instead modeling their format more closely to elaborately choreographed shows such as Cirque de Soleil, but such companies as Ringling, Clyde Beatty-Cole Bros., UniverSoul and Carson & Barnes continue to use elephants.[11] As with ballet and live theatre, some circuses are changing to retain a corner of the rapidly diversifying entertainment market.[12]

Even zoos are not immune to the change. An ever-lengthening list of cities and communities have sought to ban exotic animal acts (see Table 1)[13] and more zoos are closing their elephants exhibits, including Gladys Porter Zoo (Texas), Detroit Zoo, San Francisco Zoo, Chehaw Wild Animal Park (Georgia), Henry Vilas Zoo (Wisconsin), Louisiana Purchase Gardens and Zoo, Mesker Park Zoo (Indiana), Frank Buck Zoo (Texas), Sacramento Zoo (California), and Lincoln Park Zoo (Chicago). Those expected to close their elephant exhibits soon include the Philadelphia Zoo, Lion Country Safari (Florida), Bronx Zoo, Santa Barbara Zoo (California), and Buttonwood Park Zoo (Massachusetts).[14] In most cases, elephant relocations involve other entertainment facilities or zoos with some exceptions (e.g., Dulary, a resident of the Philadelphia Zoo, was moved to the Elephant Sanctuary in Tennessee).

4. Elephant Health and Care Regulation

Free-ranging elephants and those kept captive have a long history of being treated very differently by the law and by those considered responsible for them. Although international conservation efforts for wild elephants were under way and supported by the American Association of Zoological Parks and Aquariums (AAZPA), little or no protection was given to elephants in captivity. The disparity between the two populations persists today.[15]

As of 2007, there are two pieces of federal legislation and implementing legislation that extend to elephant welfare and regulations in all states, the Animal Welfare Act (AWA, 1970) and the Endangered Species Act (ESA, 1973). These laws are designed to guard elephant welfare as well as human safety and health. The AWA is administered by U.S. Department of Agriculture (USDA) through its Animal and Plant Health Inspection Service (APHIS); the ESA is administered by the U.S. Fish and Wildlife Service (FWS).

4.1 The Animal Welfare Act

To legally use an animal covered under the AWA for the purposes of public display and entertainment, a license must be obtained as an exhibitor. The costs for such licenses range from $40 to $310, depending on the size of the exhibit (i.e., number of animals), and type of enterprise. Regulated animal exhibits include state, county, and local government zoos; foundations; private individuals or corporate business-owned entities; animal performances; roadside zoos; and promotional exhibits.

Circuses are regulated under a Class C exhibitor license, requiring regulations and standards that pertain to, but do not take into account, elephant biology, ethology (behavior) and ecological requirements. There are no specific AWA guidelines tailored to elephants, with the exception of tuberculosis testing, treatment, and necropsies.

Criteria for obtaining and maintaining an exhibitor license require keeping accurate records and veterinary records; minimizing possible danger to humans (e.g., disease control, barrier

conformation and distance); the presence of an experienced attendant for "dangerous animals" during such activities as elephant rides; and providing performing animals a rest period equal to the time of performance. Individual exhibitors must provide their animals with adequate care and treatment in the areas of housing, handling, sanitation, nutrition, water, veterinary care, and protection from extreme weather and temperatures.

The majority of complaints against USDA implementation of the AWA center on what are considered to be inadequacies in regulation standards (e.g., failure to address the ecological and ethological criteria specific and vital to elephants) and the apparent inadequacies of penalties as evidenced by the inability to prevent violations and the occurrence of repeat offenses.[15,16] A second area of concern is directed at improving human health safety. For example, criteria defining what constitutes "an experienced attendant" are not specified, and neither are there detailed restrictions on who may qualify for licensure. These shortcomings are cited as reasons for incidents such as that which occurred in 2002, when two elephants contracted out by the Shriners from the George Carden Circus abruptly left the performing arena. The elephants traveled two miles and injured a child in the process of escape and recapture. Records from the 1990s document known deaths and more than 100 injuries to elephant personnel, members of the audience or passersby. USDA inspectors have issued numerous citations concerning poor management and monitoring of tuberculosis and other illnesses which are prevalent in elephants in circuses and close confinement in general.[15,16,17]

The third major issue concerns regulation enforcement and a paucity of resources committed to this task. There is currently a huge discrepancy between the number of inspectors and the number of facilities that house wild animals; approximately 100 inspectors are responsible for nearly 12,000 facilities nationwide. Understaffing undermines what are considered to be systemic problems: achieving appropriate monitoring, and keeping and obtaining accurate current counts of elephants and health reports. Typically, records are not open for public analysis, and while the AWA requires exhibitors to maintain records of acquisition and

disposition, accessibility through the Freedom of Information Act (FOIA) is not possible because the USDA reviews these documents at the inspection site and does not keep the records on file in its own offices. Not only are many of the records kept privately, but it is also difficult to keep track of many exhibitors. Elephant studbooks for each species provide some information, but are not entirely accurate because no single, centralized entity is in charge of tracking individual elephants and their owners. As a result, elephants' names change, with the result that individuals may be exchanged and sold without record. The limits of auditing and personnel therefore significantly impair the efficacy of elephant welfare and handling assessment. All of these points have led to calls for scientifically based laws that can be interpreted accurately and enforced more stringently to discourage perpetrators.

4.2 The Endangered Species Act

Under the Endangered Species Act, once a species is listed, any person subject to the jurisdiction of the United States is prohibited from "taking" that species—i.e., harming, harassing, wounding, shooting, killing, etc.—as well as banned from possessing, selling, delivering, carrying, transporting, or shipping any endangered species that is unlawfully "taken," or from delivering, receiving, carrying, transporting, or shipping in interstate or foreign commerce" in the course of a commercial activity" (16 U.S.C. § 1538). The Asian elephant is listed as an endangered species, and all the protections of the Act apply. However, the African elephant is listed only as "threatened," and the Fish and Wildlife Service has established a "special rule" under 16 U.S.C. § 1533(d) for the African elephant that gives them less protection (50 C.F.R. § 17.40(e)).

4.3 State and local requirements and challenges

State and local laws have been enacted to augment federal regulations.[19] Significantly, both the numbers and frequency with which legal challenges and legislation have been introduced at state, city, and local levels seeking to limit animal acts and circus practices have increased. The purpose of many of these efforts has been to more fully protect performing animals, enrich their lives, and increase their welfare (Table 2). For instance, since 2000, more than

27 elephant welfare bills have been introduced (although many have not been passed).[16] There are no federal or state laws that prohibit the use of the bullhook (ankus).

Legal challenges extend beyond state and local. Numerous complaints have been filed with the USDA for what have been considered lax attitudes toward monitoring, assessing, and enforcing existing regulations. For example, the Office of the Inspector General completed an audit in September 2005 where APHIS' Animal Care unit was considered to have significant deficiencies in its inspection and abilities to enforce public safety standards and regulations concerning the treatment of animals. In Defense of Animals (IDA) submitted a petition for rulemaking to APHIS in an effort to improve the requirements for space and living conditions for elephants in captivity. APHIS has asked for public comment on the handling, care, treatment and transport of elephants covered by the AWA and is proceeding in its evaluation. In contrast to the majority of legal challenges, this is significant because it is directed at the federal level, which would have jurisdiction over all states.[15] If the petition is granted, it could result in improved standards for all elephants maintained in captivity under AWA licensees.

A comprehensive lawsuit against the U.S. government's regulation of elephants was filed in 2001. In conjunction with Tom Rider, a former Ringling Brothers "barn man," four animal welfare organizations—the Animal Protection Institute, the American Society for the Prevention of Cruelty to Animals, the Fund for Animals, and the Animal Welfare Institute—have brought suit contending that Ringling Bros. and Barnum & Bailey Circus and its parent company, Feld Entertainment, are in violation of the ESA because of their mistreatment of Asian elephants. This case is pending in federal court in Washington, D.C.

5. Scientific Assessment of Elephant Health and Welfare

Public criticism of the use of elephants in circuses reflects a heightened awareness of animal minds and emotions fostered by dramatic discoveries in science since the initial AWA drafting and that relate to elephant ecology, ethology, and medicine.[15] Intensive field study of African and Asian elephants has accumulated a vast amount of data that has deepened our understanding of what being an elephant entails.[8,20,21] These new insights and information are reviewed as they pertain to language and criteria in the AWA. Particular attention is given to the section of the AWA (9C.F.R. Section 2.131(a),(b)) that requires the "handling of all animals shall be done as expeditiously and carefully as possible in a manner that does not cause trauma, …behavioral stress, physical harm, or unnecessary discomfort" and that "young animals shall not be exposed to rough or excessive public handling…which would be detrimental to their health or well-being", because definitions and standards used to assess elephant stress and trauma are one area where elephant science has advanced most.

5.1 Current models of vertebrate brains and behavior

Animals are routinely used as surrogate experimental subjects in lieu of humans.[22] Whereas extrapolating from such animal "models" to humans has long been an acceptable practice by those engaged in vivisection and other studies, the reverse has not been considered scientifically robust. Humans have been defined by what animals lacked; namely, higher-order faculties that are described by the field of psychology.

Today, in contrast, data and theory have brought human and animal models to near unity and laid the foundations of trans-species science.[23,24] Ethological and neurobiological studies agree that all vertebrates share common brains structures and mechanisms responsible for complex affective, behavioral, and cognitive functions. Attributes once thought unique to humans (e.g., emotions, self-awareness, agency, consciousness, complex cognitive abilities, capacity to grieve, episodic memory, vocal

learning, and intelligence) are found in many other species, including elephants.[25-37] An understanding of a common neuroethology means that human biomedical models are now scientifically appropriate for investigating and evaluating elephant psychophysiological states and stress effects.[30] Stress is a key concept in the analysis of elephants in captivity because it describes in scientific terms what the experience of capture and confinement translates to in terms of elephant mental and physical well-being.

5.2 Trauma and stress

Stress is defined as "the non-specific response of the body to any demand"[38] and not considered detrimental until the individual is pushed beyond his or her physical or psychological limit.[36] Every species, and individual, has a particular evolutionary and ecological shaped "envelope" of tolerance within which they live more or less comfortably. When this threshold is breached, there is the potential for psychological and physiological damage.[40]

Traumatic stress is generally distinguished from other stress in that it defined as physically or emotionally inflicted injury perceived by an individual or a group to threaten their existence.[41,42] Chronic stress and trauma lead to both internalized (e.g., increased vulnerability to disease and predisposition to injury) and externalized (e.g., asocial and atypical behaviors) impairment via complex changes in the brain and behavior.[43] Behaviorally, stress and trauma are often manifested as a persistent fearful temperament; diminished memory and social judgment; stereotypies (e.g., excessive pacing, chewing, grooming); depression; anorexia or other eating disorders; self-mutilation; increased aggression; and other forms of violence.[41,42,44] The resulting impairment to social and emotional structures of the brain, particularly early in life, are responsible for many abnormal and inappropriate emotional responses that become apparent at later stages of life.[45,46,47,48]

Trauma differs from other diagnoses in that it includes not only the symptoms but the precipitating source. Post-traumatic stress disorder (PTSD) is unique in that it is one of the only two disorders (the other being Reactive Attachment Disorder) that includes as part of its definition the cause of presenting symptoms.[49] Individuals who have sustained early

onset, prolonged or multiple, highly invasive, repeated traumatic events, and/or who are unable to escape their circumstances, typically develop more complicated and enduring symptoms referred to as Complex PTSD. Complex PTSD is characteristic of individuals made captive through physical force, intimidation, or enticement through either physical or emotional control.[50,51]

In its most basic definition, captivity prevents free will and a sense of self as an instrument of change in one's life. Reports from human hostages and in animal studies on deprivation, torture, and imprisonment consistently cite the corrosion of the captive's ability to retain the will to live that occurs with an "annihilation of agency." [52,53] The inability to exercise free will to eat, drink, move, socialize, or engage in other activities (or not) according to one's desired needs, and being subjected to forcible domination, are the primary factors responsible for undermining core psychobiological well-being.[51] Such frustrated abilities and deprivation result in unnatural and unhealthy levels of stress.

5.3 Stress and elephants in captivity

Captivity is an ecologically and evolutionarily unprecedented condition that constitutes a dramatic departure from the normal lives of free-roaming elephants.[4,15] The effects of confinement on elephants in captivity can be measured against studies of the behavior of free-roaming elephants and their daily activities, including physical activities (e.g., average walking distances, the surfaces on which they walk, climate, diet, time and number of activities engaged in), and social parameters (e.g., normative herd structure and behavior across range of spatial and temporal scales). These differentials create highly stressful conditions and trauma.[54]

From the perspective of vertebrate psychobiology and traumatology, the processes of close-confinement captivity are formative processes leading to the types of debilitating mental and physical health problems consistently observed in elephants in captivity. Close-confinement, therefore, is a condition that exceeds the thresholds beyond which an elephant can successfully adapt. For example, the experience of wild-caught elephants forcibly removed from their families closely conforms to the criteria used to diagnosis

PTSD.[55] These captured elephants are "exposed to an extreme traumatic stressor involving direct personal experience of an event that involves actual or threatened death or serious injury" (Criterion A1). Elephants who are taken into captivity have witnessed "an event that involves death, injury, or a threat to the physical integrity of another… unexpected or violent death, serious harm, or threat of death or injury experienced by a family member or other close associate "and who respond to the event with "intense fear, helplessness, or horror" (Criterion A2).[49]

Once captured, elephants used in circuses are subjected to absolute control, social and physical deprivation, and in many cases, psychological and physical violence. Working elephants are routinely transported in dark carriers for many hours with little or no food and water, chained and housed in concrete, poorly lit barns, required to perform for extended periods without break, and forced to stand without sun protection or shelter for many hours. AZA guidelines assert that "elephants can be trained and habituated to transport, with no obvious ill effects", but there continue to be serious injuries and even deaths that occur during transport.[56]

Circuses (and, commonly, zoos) employ a "dominance-based free contact" approach to elephant control. A variety of tools and methods that cause intense distress, pain, and injury are employed to limit elephant behavior and movement. Bullhooks—wooden poles with a curved metal hook at one end—are used to inflict pain on sensitive areas of the elephants for the process of "breaking," a long-held tradition that is grounded in principles of physical and emotional coercion to obtain absolute control.[57,58] Typically, the breaking process begins with the removal of infants from their family units followed by bodily immobilization, beating, and starvation/deprivation until the elephant accepts the trainer as his or her "master" (i.e., stops resisting and is "broken"). Negative reinforcement techniques are a part of regular training (e.g., bullhook beatings for poor performance, displays of resistance, and/or unapproved socialization with other elephants).[59,60] The severity of the negative conditioning through the breaking process allows the trainer later to yield relatively little force in most cases. Elephant trainer and circus consultant Alan Roocroft writes:

> When corporal punishment is administered to an elephant, it has to be fairly forceful in order that it is perceived by the elephant to be punishment at all. … The trainer must now intimidate the animal in order to acquire a dominant position. … Restraining a potentially hostile elephant needs at least a crew of eight, preferably 10, in order to insure sufficient 'muscle' is available. Once immobilized, the elephant may be the object of punishment in the form of blows with a wooden rod.[61]

Even while multiple studies have shown that such physical constraint is seriously detrimental to animal health, the AZA allows its members to chain elephants up to 12 hours out of every day; circus elephants are often chained continuously up to 16-18 hours for purposes of restraint and "to deliver routine husbandry and corporal punishment."[15,57]

The USDA is aware of these practices and has frequently cited circuses for neglect, severe beatings, and other forms of abuse that cause elephant injury and create hazard for humans and elephants. For example, two elephants transferred from the Ringling Brothers Center for Elephant Conservation to the Phoenix Zoo showed signs of severe distress: "After years of circus performing…and negative reinforcement, such as hits and pokes, along with years of doing unnatural tricks,…the elephants [became] aggressive and dangerous....Reba [who once killed a circus trainer] pulled on her own nipples and Sheena was angry and withdrawn....'When you think about these animals, they had traumatic lives,' [said Geoff Hall, Phoenix Zoo vice president of living collections]."[16]

In August 1998, the USDA charged Ringling with violating AWA regulations through a failure to treat and provide veterinary care that resulted in the death of an infant Asian elephant named Kenny who had been forced to perform despite his recognized illness. (Ringling paid $20,000 in an out-of-court settlement.) Examples of other citations include the neglect and abuse that caused one infant elephant, Riccardo, to fall off a pedestal, sustain severe fractures, and eventually die, and another juvenile elephant, Benjamin, to drown while avoiding a trainer with a bullhook who had beaten him repeatedly. [16,62]

Much is made of the elephant-human relationship in captivity. Indeed, trainers and keepers are responsible for all aspects of elephant survival. Social isolation of the elephants from a natural herd group renders the trainer/keeper-elephant bond even more important, and dangerous to elephant well-being. Such power-based relationships are psychologically corrosive because the human plays the dual role of the agent of captivity/abuse and of attachment/survival. Contrary to arguments by circus personnel and many zoo keepers, the relational paradigm based on dominance and punishment is not consistent with wild elephant social behavior.[63] Therefore, the relationship always involves the potential for repeated trauma (i.e. re-traumatization), fear, and harm.[51]

The costs of such chronic stress and trauma are evident in elephant biology and behavior. Symptoms of elephants' inability to successfully adapt to captive conditions include decreased longevity, foot ailments, auto-immune disease, unanticipated aggression, depression, aggression toward each other, stereotypy, and infanticide, all of which are commonly observed in elephants kept in close confinement. Stereotypic behavior has never been noted in more than 34,000 sightings of wild elephant groups containing one to 550 individuals. There is a total absence of observations of chronic foot or weight problems in the wild Amboseli, Kenya, elephant population, consisting of more than 2,200 individuals.[64] In contrast, a survey based on records examined by In Defense of Animals in 35 zoos involving 135 elephants showed that 62 percent and 42 percent of the elephants have severe foot disease and joint disorders, respectively.

Also consistent with cross-species studies on trauma, elephants in captivity show a variety of psycho-behavioral symptoms that include personality disorders, poor social skills, loss of impulse control, hyperarousal and unpredictable outbursts, and a high vulnerability to self-injury. Dissociative or dissociative-like behaviors (e.g., somatization, stereotypy, swaying) are commonly observed in elephants who are confined.[58,65] Elephants in captivity exhibit greater aggression (PTSD), self-injury, anhedonia (the inability to experience pleasure from positive events), infant rejection and injury found in other species, including humans living under similar conditions.[30]

Elephant attacks on humans and other species, such as the extraordinary event in 2007 at the Tel Aviv, Israel, zoo, when a 36-year-old bull killed a 46-year-old female elephant, are predictable symptoms reflecting trauma-induced behavior.[4] Aggressive, fatal behavior of this type is unprecedented in the wild.

5.4 Early trauma and captive breeding

The issue of severe trauma has serious implications for captive breeding programs. Mammalian brain development is highly influenced by experiences and is sensitive to changes in an individual's environment. Such conditions routinely arise in cases where an infant elephant is prematurely weaned, reared in socially unnatural conditions (e.g., lack of normal herd structure), or is moved away from close companions: all of which are common practices in zoos and circuses.[15] Traumatic disruption from a single threatening event can create lifelong changes in social learning abilities and brain organization.[3,67] Whether such damage is direct (e.g., death or loss of mother) or indirect (e.g., transmitted maternal stress), it can have a lasting impact on brain function and predispose individuals to disease, behavioral disorders, and early death.[45,46] Trauma and stress experienced by an adult mammal transmit to the fetus, infants, and other members of the social group both neurobiologically and through social learning.[68,69,70]

Captive birthing itself is a source of trauma. An excerpt from the St. Louis Elephant Management Manual illustrates the extremely stressful conditions of captive births and the radical departure from conditions and behavior in the wild:

> When the first signs of labor appear, the elephant handlers will tether the elephant on 3 or 4 leg restraints (chain or rope).… Inexperienced elephants have rejected or even killed newborns. The newborn calf will be immediately removed from the mother.…The rest of the herd will be in adjacent stalls to avoid interfering with the elephant care staff but still observe the birth and newborn calf.

Captive births often lead to premature infertility and infant injury. For example, on February 9, 1999, a USDA report from a site visit to the

Ringling breeding center in Florida documented wounds on two infant elephants' legs inflicted while they were being separated from their mothers:

> [T]here were large visible lesions on the rear legs of both Doc and Angelica (baby elephants). When questioned as to the cause of these lesions, it was stated by Mr. Jim Williams and Mr. Gary Jacobson that 'these scars were caused by rope burns, resulting from the separation process from the mothers on January 6, 1999.' [16]

According to Ringling's veterinarian this process is a "normal industry standard." [60]

Captive-born elephants are also extremely vulnerable to injury or even death during human-managed birthing and from the actions of older, attending elephants, who were traumatized themselves or unschooled in infant care. It is not uncommon when a captive elephant mother "gives birth and then almost immediately turns around and attacks and kills or injures her newborn calf" and/or when other female elephants try to injure and kill the newborn.[72] In contrast, out of 1,500 observed elephant births in the wild in Amboseli, no cases of infanticide or calf rejections were observed.[64] Also, although only two cases of infertility (out of 558 females over 10 years of age) have been observed in Amboseli, the IDA survey at 35 zoos showed that there were 60 elephant stillbirths, and out of 15 live births, 73 percent of the pregnant elephants experienced complications during birth, with 25 percent having reproductive disorders.[73,74,75,76] These data are consistent with literature documenting that behaviors such as infanticide, infant neglect, and poor infant-mother bonding are disorders associated with the experience of early childhood and maternal trauma in many species.[30,68] Emotional instability, aggression, and intentional attacks on other elephants, personnel and the public are consistent with changes in normal brain development that occur under conditions of severe stress particularly in the absence of normative rearing, supportive social structures (that is, a stable natal herd), and environments.[30]

6. Recommendations and Conclusions

Early trauma, chronic stress, and severe deprivation are common to most, if not all, close-confinement institutions, notably circuses and zoos. These conditions lead to severe psychobiological and physiological damage to elephants in captivity. The added stress and trauma exerted by such practices as beating, negative reinforcement, chaining, physical abuse, and social isolation further undermine elephant well-being that transmits laterally (among other elephants) and vertically (across generations). Given the parallels between human and elephant psychobiology, the experience of elephants in circuses and in many zoos is equivalent to that of many human prisoners and victims of torture. Close-confinement captivity and the use of elephants in circuses are highly detrimental to elephants and increase the risk of injury for circus and zoo personnel as well as the general public.

Current understanding of elephant psychobiology, ethology, and ecology indicates that existing standards regulating the care and health of elephants in captivity are highly inadequate and require revision. As stated earlier, this analysis has focused on elephants in circuses, but these findings hold for all close-confinement elephants. It is recommended that the AWA and other laws and regulations relating to elephants be updated to reflect current scientific knowledge by:

(1) Matching guidelines and standards for the well-being and welfare of elephants in captivity with current models of human psychological and physiological health.

(2) Tailoring such guidelines to mental, social, emotional, and biophysical conditions of data and knowledge of (historic) free-ranging elephant ecology, psychobiology, and (social) ethology.

The proposal to model regulations and standards for elephant care and well-being on those used for humans is to be taken literally. While in the past such a suggestion might have been deemed anthropomorphic hyperbole, today's neurobiological, psychobiological, and ethological understanding of stress and trauma make such reservations out of date.

The substantive evidence and cogent arguments provided by science compel a new approach to the design of elephant healthcare and well-being that is commensurate with our knowledge. Consistent with human traumatology, trauma prevention is the first step to ameliorate distress. This leads to laws:

(3) Prohibiting the obtaining and use of elephants in entertainment or other businesses.

(4) Prohibiting psychological and physical abuse of elephants.

As much as any other potent ecological stressor, human-caused stress and trauma, as exercised through captive conditions, operate as agents of natural selection. Because the effects of captivity dramatically decrease overall fitness, the use of captive breeding as a tool for conservation is therefore not advised from both scientific and ethical standpoints. Therefore recommendations include:

(5) Prohibiting the capture of wild elephants, importation, and captive breeding.

Although captivity by definition excludes the possibility of providing ideal free-ranging conditions, a feasible standard based on scientific criteria based on wild elephant populations is possible. Precedents for such a standard exist in the form of two American accredited sanctuaries: Elephant Sanctuary in Tennessee and the Performing Animal Welfare Society sanctuary, and are detailed elsewhere. This leads to the final recommendation:

(6) Requiring safe, immediate transfer of elephants now in closed- confinement captivity to accredited sanctuaries.

These conclusions challenge and require significant change in assumed cultural norms. However, they are not unprecedented. Similar to other industries based on the commercialization of nature, regulations concerning elephants in captivity require fundamental re-working to accurately reflect social and ecological realities. Scientific evidence overwhelmingly proves that captivity is not a viable means to save the species through breeding or education.

This knowledge also demands a new ethic. The fact that science has established that elephants possess attributes once considered uniquely human—emotions, culture, grief, intelligence, social complexity, tool-use, vocal learning, and even a sense of self—is really no surprise. But what is surprising is that institutions and professionals in charge of elephants have not altered their care significantly to match what we now know. If we recognize that elephants are like us in so many ways, our knowledge compels us to reciprocate and measure up to elephant standards of ethics and humanity as their equals. The time is well overdue to reconcile what we know and what we do.

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8. Table 1: Legislative Attempts to Prohibit Display of Animals in Circuses

Courtesy: Animal Protection Institute

Year	State	Proposed Legislation	Status
2000	Rhode Island	Sought to prohibit elephants, lions, tigers, and bears from being displayed.	Passed the House and failed in Senate
2001	Florida	Sought to prohibit elephant rides.	Failed
2001	Maine	Sought to prohibit elephant displays and rides.	Passed the House and failed in Senate.
2001	Maryland	Sought to prohibit the use of electric prods or shocking devices, chains used to restrain or tie-down devices, whips, bull hooks or similar device as part of a traveling show and to prohibit elephant rides.	Failed
2001	Massachusetts	Sought to prohibit elephant displays and rides.	Failed
2001	Rhode Island	Sought to prohibit elephants, lions, tigers, and bears from being displayed.	Failed
2002	California	Sought to prohibit public display of exotic animals, elephant rides, and to require information about circus to be sent to local animal control.	Failed
2002	Rhode Island	Sought to prohibit elephants, lions, tigers, and bears from being displayed.	Failed
2003	Maine	Sought to prohibit elephant displays and rides.	Failed
2003	Massachusetts	Sought to prohibit wild cats, bears, elephants, and non-human primates from being displayed in circuses and traveling shows.	Failed

Table 1: Continued.

Year	State	Proposed Legislation	Status
2003	New Jersey	Two bills: (1) Sought to prohibit elephant displays; and (2) Sought to prohibit elephants, lions, tigers, and bears from being displayed.	Failed
2003	Rhode Island	Sought to prohibit elephants, lions, tigers, and bears from being displayed.	Failed
2003	Tennessee	Sought to prohibit elephants from performing in circuses.	Failed
2004	Connecticut	Sought to prohibit circuses that use elephants from performing within the state.	Failed
2004	Hawaii	Sought to prohibit bringing a live elephant into the state for any reason other than breeding or exhibition in a zoo.	Failed
2004	Massachusetts	Sought to prohibit the display of certain exotic animals - including wild cats, bears, elephants, and non-human primates -- in circuses, carnivals, and other traveling exhibitions.	Failed
2004	New York	Sought to regulate the treatment of elephants used in traveling exhibits. It would require individuals who bring elephants into the state to file an advance itinerary, provide transportation that meets certain temperature and ventilation standards, and un-tether the animal for a prescribed period of time daily. In addition, the bill would prohibit the use of bullhooks in a manner that breaks the elephant's skin and it would ban "elephant rides."	Failed

Table 1: Continued.

Year	State	Proposed Legislation	Status
2004	Rhode Island	Sought to govern the performance and display of exotic animals — including elephants, lions, tigers, bears, exotic horses, and exotic reptiles — in Rhode Island. It would require a veterinarian to inspect the animals themselves, as well as the living quarters and transportation facilities used for the animals. And the use of bullhooks, whips, and prods would be banned during the animals' training and performances.	Failed
2005	Connecticut	Two Bills: (1) Sought to prohibit the display of elephants in traveling exhibitions, theater exhibitions, and circuses. (2) This bill would have required traveling exhibitions with elephants to file an itinerary 30 days prior to the appearance. In addition, the bill would allow inspections of the elephants to ascertain their health and physical condition, and it would ban the use of shock devices or bullhooks on elephants. Finally, the bill would require the Agriculture Department to adopt regulations to prevent the abuse of elephants in traveling exhibitions.	Both Failed
2005	Massachusetts	Sought to prohibit the display of certain exotic animals - including wild cats, bears, elephants, and non-human primates -- in circuses, carnivals, and other traveling exhibitions.	Carry-over to 2006

Table 1: Continued.

Year	State	Proposed Legislation	Status
2005	New York	Sought to regulate the treatment of elephants used in traveling exhibits. It would require individuals who bring elephants into the state to file an advance itinerary, provide transportation that meets certain temperature and ventilation standards, and untether the animal for a prescribed period of time daily. In addition, the bill would prohibit the use of bullhooks in a manner that breaks the elephant's skin and it would ban "elephant rides."	Failed
2005	Rhode Island	Sought to prohibit the use of animals as entertainment in circuses and other exhibitions in the state.	Failed
2006	California	Sought to prohibit the use and possession of chains and bullhooks around elephants and established minimum space requirements for elephants housed at stationary facilities or kept on traveling display.	Passed out of Assembly Public Safety; failed in Assembly Appropriations
2006	Massachusetts	Seeks to prohibit the display of certain exotic animals - including wild cats, bears, elephants, and non-human primates -- in circuses, carnivals, and other traveling exhibitions.	Pending
2006	Nebraska	Sought to prohibit certain egregious "training" or disciplinary techniques on elephants, including the deprivation of food or water, and the use of bullhooks, electric prods, baseball bats, blow torches, and chaining.	Failed to pass out of Judiciary Committee

Table 1: Continued.

Year	State	Proposed Legislation	Status
2006	Rhode Island	Sought to prohibit the use of animals as entertainment in circuses and other exhibitions in the state.	Failed
2007	California	Seeks to prohibit the use and possession of chains and bullhooks around elephants and established minimum housing requirements for elephants at stationary facilities.	Pending
2007	Connecticut	Seeks to prohibit the use and possession of bullhooks around elephants.	Pending
2007	Massachusetts	Seeks to prohibit the use and possession of chains and bullhooks around elephants at traveling shows and circuses.	Pending

9. Table 2: Summary of State Laws Relating to Exhibiting Exotic Animals

Courtesy: N.Paquette

State	Summary of Law Regarding Exhibitors	Exemptions	Other Requirements of Exhibitors	Citation
AL	The Commissioner of Conservation and Natural Resources may grant a permit to a person qualified by education or experience in the care of wildlife to exhibit animals.[1]	Any municipal, county, state or other publicly owned zoo or wildlife exhibit, privately owned traveling zoo or circus or pet shop.[3]	Specific care requirements exist for exhibited captive wild animals.[2] Nonresident traveling circuses, menageries, and wild animal shows shall notify the State Veterinarian at least 10 days prior to arrival and prior to any billing or advertising in Alabama.[4] Number of animals shall be reported to the State Veterinarian 10 days prior to entry or intrastate transportation, and immediate opportunity for examination of animals made available.[5]	[1]ALA. CODE § 9-11-324 [2]ALA. CODE § 9-11-325, § 9-11-323 — § 9-11-324 [3]ALA. CODE § 9-11-328 [4]ALA. ADMIN. CODE r. 80-3-6-.12 [5]ALA. ADMIN. CODE r. 80-3-6-.23
AK	The Commission of Fish and Game may issue a permit to possess, import, or export an elephant to a person who intends to exhibit the animal commercially and who maintains *(cont.)*		An animal transported into Alaska must be accompanied by a permit and health certificate.[3]	[1]ALASKA STAT. § 16.40.060 [2]ALASKA ADMIN. CODE tit. 5, § 92.035 [3]ALASKA ADMIN. CODE tit. 18, § 36.005

Table 2: Continued.

State	Summary of Law Regarding Exhibitors	Exemptions	Other Requirements of Exhibitors	Citation
AK	*(cont.)* personal injury and property damage insurance.[1] Permits are required for temporary commercial use of live game animals, including use for a circus, for a traveling show, or for film production.[2]		An animal transported into Alaska must be accompanied by a permit and health certificate.[3]	[1]ALASKA STAT. § 16.40.060 [2]ALASKA ADMIN. CODE tit. 5, § 92.035 [3]ALASKA ADMIN. CODE tit. 18, § 36.005
AZ	A zoo license allows the following: exhibit, educational display, import, purchase, export, possess, propagate, euthanize, transport, give away, offer for sale, or sale or trade restricted live wildlife and other Arizona wildlife legally possessed in the state, subject to restrictions. Prerequisites for approval of a zoo license: 1) Arizona Game and Fish Department shall ensure *(cont.)*	Wildlife imported, transported, possessed, exhibited, and exported for a government-authorized state or county fair, or by a circus, or for the purpose of filming for tv, movies, or commercials is exempt from Special License requirements that include captivity standards.[3]	Wildlife (except cervids) may be imported, transported, possessed, exhibited, and exported for a government-authorized state or county fair, or by a circus, or for the purpose of filming for tv, movies, or commercials if the wildlife is accompanied by evidence of lawful possession, is not in Arizona for more than 60 consecutive days, and is not allowed to come into contact with the public.[4]	[1]ARIZ. ADMIN. CODE 12-4-420 [2]ARIZ. ADMIN. CODE 12-4-417 [3]ARIZ. ADMIN. CODE 12-4-406 [4]ARIZ. ADMIN. CODE 12-4-428

Table 2: Continued.

State	Summary of Law Regarding Exhibitors	Exemptions	Other Requirements of Exhibitors	Citation
AZ	*(cont.)* that the issuance of a license is for a purpose in the best interest of the wildlife or species to be held, does not adversely impact upon any other wildlife in Arizona, and does not pose a threat to wildlife or public safety.[1] Issuance of a wildlife holding license also allows exhibition -- as long as the wildlife does not pose a threat to Arizona.[2]	Wildlife imported, transported, possessed, exhibited, and exported for a government-authorized state or county fair, or by a circus, or for the purpose of filming for tv, movies, or commercials is exempt from Special License requirements that include captivity standards.[3]	Wildlife (except cervids) may be imported, transported, possessed, exhibited, and exported for a government-authorized state or county fair, or by a circus, or for the purpose of filming for tv, movies, or commercials if the wildlife is accompanied by evidence of lawful possession, is not in Arizona for more than 60 consecutive days, and is not allowed to come into contact with the public.[4]	[1]ARIZ. ADMIN. CODE 12-4-420 [2]ARIZ. ADMIN. CODE 12-4-417 [3]ARIZ. ADMIN. CODE 12-4-406 [4]ARIZ. ADMIN. CODE 12-4-428
AR	A certificate of veterinary inspection and an entry permit are required for the exhibition of livestock, poultry, and exotic animals entering Arkansas.[1]	USDA licensed exhibitors and/or rehabilitation permittees are exempt from possession prohibitions.[2]	There are specific health requirements for the exhibition of particular species.[1]	[1]125 00 CARR 007 [2]ARK. CODE § 15.01
CA	A person must obtain an exhibitor permit to display live restricted wild animals as defined under § 2118 and corresponding *(cont.)*	Bona fide scientific institutions, AZA accredited zoos, and organizations granted a waiver are exempt from specific *(cont.)*	Specific care and caging requirements exist for certain exhibited captive wild animals, i.e. elephants shall be unchained on dirt for a minimum of 5 hours per each 24-hour period.[4] *(cont.)*	[1]CAL. CODE REGS. tit. 14, § 671.1(b)(2) [2]CAL. CODE REGS. tit. 14, § 671.1(c)(1) [3]CAL. HEALTH & *(cont.)*

Table 2: Continued.

State	Summary of Law Regarding Exhibitors	Exemptions	Other Requirements of Exhibitors	Citation
CA	*(cont.)* regulations. An exhibitor permit can be obtained by a resident or a non-resident for commercial exhibition purposes.[1] To qualify for an exhibitor permit the applicant must satisfy specific age and experience requirements.[2] Traveling acts must notify city and county animal control and provide a schedule 14 days prior to first performance.[3]	*(cont.)* permit requirements and/or qualifications, except for animals, as determined by the Dept. of Food and Agriculture, to be detrimental to agriculture, native wildlife, or the public.[5] Circuses; USDA licensed exhibitors, dealers, and breeders; and qualified wildlife rehabilitation centers are exempt from large cat possession prohibitions.[9]	*(cont.)* Live wild animals designated pursuant to § 2118 are subject to inspection requirements.[6] Transportation standards for live restricted animals traveling for exhibition.[7] Circus or traveling show animals shall be allowed a rest period of at least four hours per day within an enclosure.[8]	*(cont.)* SAFETY CODE § 25989.1 [4]CAL. CODE REGS. tit. 14 § 671.2 and § 671.3 [5]CAL. FISH & GAME CODE § 2150 and CAL. CODE REGS. tit. 14, § 671.1(c)(1) [6]CAL. FISH & GAME CODE § 2185; 2187 [7]CAL. CODE REGS. tit. 14, § 671.4 [8]CAL. CODE REGS. tit. 14, § 671.2(a)(10) [9]CAL. FISH & GAME CODE § 3005.9
CO	A Wildlife Exhibitors Park license is required for the exhibition of live wildlife (except birds) for educational or promotional activities by commercial operations.[1] Exhibition of animals in the families Felidae, Ursidae *(cont.)*	AZA accredited zoos are exempt from Zoological Park Licenses, which must meet all criteria of 33-4-102(13)(a) C.R.S.[4] Circuses and zoological parks and petting zoos licenses or *(cont.)*	Specific caging requirements exist for exhibited captive wild animals.[3]	[1]2 COLO. CODE REGS. § 406-6 (1104 and 1105) [2]2 COLO. CODE REGS. § 406-6 (1104) [3]2 COLO. CODE REGS. § 406-6 (1108) [4]2 COLO. *(cont.)*

Table 2: Continued.

State	Summary of Law Regarding Exhibitors	Exemptions	Other Requirements of Exhibitors	Citation
CO	*(cont.)* or Canidae outside the licensed Wildlife Exhibitors Park premises is prohibited except under certain caging, public contact, insurance, and reporting conditions.[2]	*(cont.)* registered under the AWA are exempt from the rules and regulations of the Pet Animal Care and Facilities Act.[5]	Specific caging requirements exist for exhibited captive wild animals.[3]	*(cont.)* CODE REGS. § 406-6 (1104) [5]8 COLO. CODE REGS. § 1201-11
CT	Possession and importing laws only.			CONN. GEN. STAT. § 26-55, § 26-57; CONN. AGENCIES REGS. § 26-55-2

The **Animals & Society Institute** is an independent research and educational organization that advances the status of animals in public policy and promotes the study of human-animal relationships. We are a think tank as well as a producer of educational resources, publications and events. Our objectives are to promote new and stricter animal protection laws, stop the cycle of violence between animal cruelty and human abuse, and learn more about our complex relationship with animals.

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