Pro Elephant Network

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COMMENTS ON DRAFT POLICY POSITION ON THE CONSERVATION AND ECOLOGICALLY SUSTAINABLE USE OF ELEPHANT, LION, LEOPARD, AND RHINOCEROS

28 July 2021

Be angry, elephant, shout at the gods of Africa
Be angry, elephant, shout at the grey
ghosts of our forefathers
Be angry, elephant, and shout at the
people of modern days who do not do
anything to shield you from the murderer and the thief
Be angry, elephant, shout at the land that no longer cares about living things
Be angry, elephant, shout at the very
stars themselves and demand from them justice[1].

[1] Credo Mutua, African Praise Song. 'Praise Song to the Elephant' by Credo Mutwa – Literature Captive (wordpress.com)

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INTRODUCTION

The Pro Elephant Network (PREN) consists of an international community of diverse individuals and organizations, comprising specific expertise on wild and captive elephants, from both western and eastern academies, including the fields of science, health, conservation, elephant welfare, economics, community leadership, social justice and the law.

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PREN Members welcome a Draft Policy Position which has a broad vision of "*secured, restored and rewilded natural landscapes with thriving populations of elephant, lion, rhino and leopard, as indicators for a vibrant, responsible, inclusive, transformed and sustainable wildlife sectors and an equitable society living in harmony with natural resources*".

PREN supports the Problem Statement of Section 4 of the Draft Policy Position at page 17-18, quoting, "From an international perspective, there are major issues in terms of management, trade and handling of elephant".

The Pro Elephant Network members strongly and specifically support a phase-out of captive elephants in South Africa zoos, with the proviso that all due care must be provided for the elephants currently in captivity. PREN elephants specialists would be happy to work with the South African authorities to identify the most appropriate solutions for these elephants.

There is overwhelming new science suggesting that elephants cannot thrive in captivity and can be reintegrated into the wild. On the basis of the South African N&S and the APA and the Constitutional Court, the Pro Elephant Network suggests that elephant held in captivity should be reintegrated into the wild where possible and that no more elephants should be permitted to be held captive

BACKGROUND

In 2015 our member the World Animal Protection released a report[2] uncovering that there are at least 36 commercial elephant venues, holding 215 captive elephants, operating across Southern Africa. Most of them are in South Africa, where at least 126 captive elephants are held in at least 22 different venues. Another 47 are held in seven elephant parks across Zimbabwe, 13 in two venues in Zambia and 11 elephants in two venues in Botswana.

Baby elephant being trained at a SA elephant park. Source: NSPCA Facebook page.

[2] World Animal Protection Report - 2015 [Breaking_africas_elephants_report.pdf (worldanimalprotection.org)]

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South Africa keeps animals captive for a number of reasons including breeding for live trade, breeding for body parts for trade, for food, for research, in zoos and tourist entertainment. Studies show that some species cope better with being in captive environments like zoos and aquariums, than others.

Elephants, as well as cetaceans and primates, have shown to suffer immensely in captivity. To understand the size of the global problem, there are approximately 17,000 African and Asian elephants in cages and small enclosures in zoos, circuses and work camps. So this is a significant global welfare problem.

Our concerns are based on expert understanding of elephant biology and ethology, of international agreements and national legislation, as well as public sentiment within Africa and globally.

It is universally recognized that elephants are wide-ranging, vastly intelligent, sentient beings with a highly organised social structure and form strong family bonds that can last a lifetime. Elephants require access to large, complex, stimulating ecological and social environments, and the freedom to exercise choice over their foraging options and companions. Their needs cannot be met under captive conditions, elephants in captivity are deprived on many different levels and as a result they inevitably suffer from either physical or psychological illnesses or a combination of both.

Young elephants are greatly dependent on their mothers and other family members to acquire necessary social and behavioural skills. Male calves only leave their natal families when they are approximately 12 to 15 years old and females remain for life. Disruption of this bond through the removal of young elephants from their family groups is physically and psychologically traumatic for both the calves and remaining family members. The negative effects can be severe and last a lifetime. [3] [4].The well-documented symptoms of Post-Traumatic Stress Disorder (PTSD)[5] displayed by captive elephants in zoos around the world are testimony to the damage caused by the operations of capture and long-

[3] G. A. Bradshaw and Allan N. Schore, "How Elephants Are Opening Doors: Developmental Neuroethology, Attachment and Social Context," Ethology 113, no. 5 (2007): 426–36, https://doi.org/10.1111/j.1439-0310.2007.01333.x; Graeme Shannon et al., "Effects of Social Disruption in Elephants Persist Decades after Culling," Frontiers in Zoology 10, no. 1 (2013), https://doi.org/10.1186/1742-9994-10-62
Rob Slotow et al., "Older Bull Elephants Control Young Males," Nature 408, no. 6811 (2000): 425–26, https://doi.org/10.1038/35044191
G. A. Bradshaw et al., "Elephant Breakdown," Nature 433, no. 7028 (2005): 807–807, https://doi.org/10.1038/433807a
[4] 2 Shannon, G., Slotow, R., Durant, S. M., Sayialel, K. N., Poole, J., Moss, C., & McComb, K. J. F. i. Z. (2013), Effects of social disruption in elephants persist decades after culling. Frontiers in Zoology, 10(1): 62. doi:10.1186/1742-9994-10-62
[5] G. A. Bradshaw et al., "Elephant Breakdown," Nature 433, no. 7028 (2005): 807–807, https://doi.org/10.1038/433807a .

distance transport to ex situ locations. A 2017 expose revealed footage during capture, confirming concerns that elephants are subjected to harsh and cruel treatment to force them to submit[6].

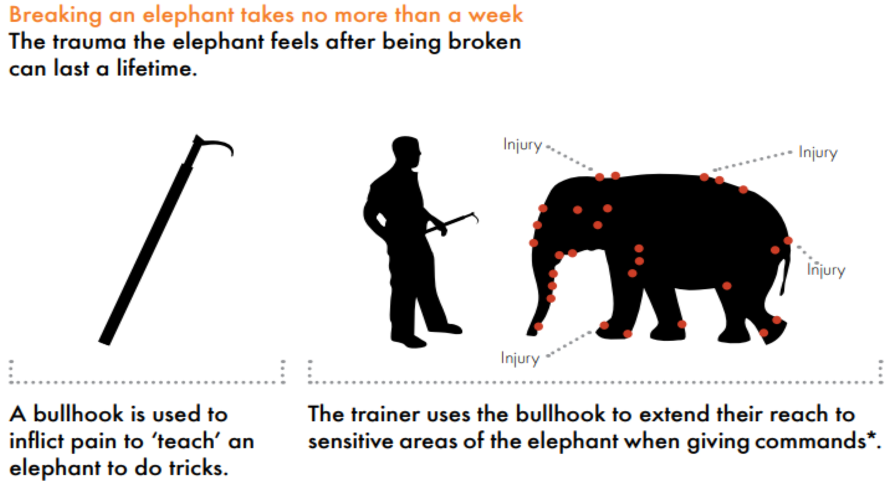
In February 2019, further video footage of young calves (some as young as two years) showed the youngsters frantically pacing around their holding pens in Hwange, with some showing signs of stress such as temporal gland streaming (dark streaks of secretion down the side of the face from the temporal gland) and others demonstrating wide-eyed, ears-splayed, chin-up defensive postures[7]. According to a paper submitted by the Governments of Burkina Faso and Niger, presented at the 69th meeting of the Standing Committee of the Convention on International Trade in Endangered Species (CITES SC69) in Geneva (Switzerland), 27 November – 1 December 2017, "captured calves transported to holding facilities suffer depression, lethargy, anxiety, increased stress, intraspecific aggression, and a diminished or non-existent appetite, sometimes resulting in death or contributing to premature mortality. Training in temporary facilities may include food and/or light deprivation, restriction of movement, forcing the animal into an uncomfortable position for extended periods of time, and regular beatings"[8].

Based on the body of overwhelming scientific evidence, South Africa took the commendable decision in 2008 to ban the capture of elephants from the wild for the purposes of captivity and trade under the terms of the National Norms and Standards for the Management of Elephants in South Africa (2008), and has recently reiterated its intention to desist from capturing wild elephants and other wild animals for export to captive facilities.

The International Union for Conservation of Nature's Species Survival Commission African Elephant Specialist Group opposes the removal of African elephants from the wild for any captive use[9]. This position was reaffirmed at the group's meeting in Pretoria, South Africa in July 2019.

[6] Exclusive: footage shows young elephants being captured in Zimbabwe for Chinese zoos | Environment | The Guardian
[7] NEW VIDEO: Zimbabwe's 35 captured baby elephants terrified in pens - Conservation Action Trust
[8] E-SC69-Inf-36.pdf (cites.org)
[9] Removal of African elephants for captive use | IUCN

On 6 September 2019, elephant specialists from around Africa and the world participated in an Indaba in South Africa, 'Taking Elephants out of the Room', to scrutinize the science, policy and welfare issues relating to elephants in captivity. The overwhelming conclusion of the Captive Elephant Indaba was that no new elephants should be placed in captivity and elephants currently in captivity should be reintegrated[10].



Credit: World Animal Protection[11]

Direct contact requires that the trainer first exert physical dominance over the animal, which is usually done at a young age using extreme physical restraint. Restrictions include denying food, water and sleep, and also direct physical punishment. The elephants are punished, and thereafter controlled using a tool called a bullhook, also known as an ankus, or guide[12].

[10] How African Elephants Fight Climate Change – IMF F&D
[11] World Animal Protection Report - 2015 Breaking_africas_elephants_report.pdf (worldanimalprotection.org)
[12] Dr Heather Rally, Wildlife Veterinarian, Symposium Big Brains in Small Spaces, July 21

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DEFINITIONS

Rehabilitation Facility

WAPFSA supports the Pro Elephant Network's definition of the word rehabilitation facility:
A rehabilitation facility, is a facility for the reintegration of wildlife, where possible, to semi-wild or wild environments, to natural habitats and wildlife societies; rehabilitation is done in registered facilities equipped for the temporary keeping of wildlife by persons with species specific care and rehabilitation expertise, in order to professionally care for and eventually rehabilitate the animals into a semi or fully wild environment. Animals are therefore kept for:

a. Treatment and recovery purposes, in the case of sick or injured wildlife (including from rescue, donation, capture from the wild and/or abandonment);
b. Rearing purposes, in the case of young or orphaned wildlife
c. Quarantine purposes; or
d. Relocation purposes, provided that such facilities have the overall intent to release the animal.

Sanctuary

WAPFSA supports the Pro Elephant Network's PREN's definition of the word sanctuary:
"A place of security and permanent care in which an animal can express his or her natural physical, social and cognitive behaviour to the maximum extent possible, while benefiting from best possible care".

Defining pre-requisites are:

a. No breeding;
b. No trading;
c. No public performances;
d. No use for any public tactile activities (walking, riding, touching, feeding);

e. The animal will have a home for life or will be used for in-situ repopulation by reintegration back to the wild or be relocated as part of a recognised conservation programme.

Rewilding

Rewilding is a progressive approach to conservation; instead of managing ecosystems to preserve particular species, rewilding is intended to reverse environmental decline by letting nature become more self-willed[13]. That means allowing wildlife the freedom to flourish and habitats to regenerate naturally[14].
Wild animals held captive or bred in captivity continue to maintain their characteristics as wild animals and should be *reintegrated into the wild or semi-wild systems,* when possible.

Reintegration

A process designed to reintroduce wildlife species or individual animals in their natural range states[15].
Rhino orphans have successfully been reintegrated from sanctuaries into the wild.
Elephants used in the tourism industry for elephant backed safaris have been successfully integrated[16] into the wild by PREN member, The Elephant Reintegration Trust.

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[13] https://www.iucn.org/commissions/commission-ecosystem-management/our-work/cems-thematic-groups/rewilding
[14] https://www.researchgate.net/publication/331097302_Rewilding_as_rural_land_management_opportunities_and_constraints_in_Scott_M_Gallent_N_and_Gkartzios_M_eds_The_Routledge_Companion_to_Rural_Planning_Routledge_London
[15] https://www.peaceparks.org/rhino-orphans-get-a-second-chance-at-a-wild-life/
[16] https://www.elephantreintegrationtrust.com/

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EFFECT OF CAPTIVITY ON THE BRAIN

Dr Bob Jacobs

The research of Dr Bob Jacobs, neuroscientist at Colorado College and an expert in comparative neuroscience in particular elephant brains, has highlighted how elephants and cetaceans share several characteristics that make them especially vulnerable to impoverished artificial environments, like those in zoos and marine parks to the point that captivity affects the physiology of their brain.

The team, led by Dr Jacobs and Dr Marino, defined captivity as the state of being confined to an artificial environment, usually designed for human benefit, which is typified by zoos. .. Impoverished environments lack essential elements that are important for development and thriving. Almost always these elements need to be supplemented with environmental enrichment devices and programs to make up for this condition, most of which are not adequate, and arguably not possible in a commercial facility.

Dr Jacobs highlighted the existing evidence on the neurological effects of impoverished environments in mammals the neural consequences or neural foundations, which have a common behavioural abnormality found in captive elephants called stereotypies.

The trans-generational evidence gathered from the important research has underscored the profound functional, anatomical, chemical and molecular effects that the environment has on the brain and on the central nervous system.

One of the first findings was that the brainwave is actually decreased in an animal that is in an impoverished environment so brain volume and brainwave both decrease.

The negative effects of an impoverished environment are distinguishable on the cerebral cortex of the brain. Neurons were smaller in the impoverished animal than in the enriched animal. The cell body contains all the neural machinery that this cell needs to function. It suggests that these neurons in the impoverished animal are not as active or as productive as in the enriched animal. Also, the dendritic arbor is less complex both in terms of length and number of branches, than what you see in the enriched animal.

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Finally, at the molecular level, we see disruptions in neurotransmitter systems throughout the brain. All of the neurotransmitter systems are affected negatively by an impoverished environment. Then you have nerve growth factors and things like BDNF (Brain Derived Neurotrophic Factors), that are positively associated with neurogenesis with neuroplasticity with emotional resilience and improved cognitive performance. All of these are severely disrupted in an impoverished environment.

A final important aspect of the captive environment is vitally important for the well-being of an elephant: exercise is a crucial component for enrichment. And of course, unfortunately, large captive animals in particular are deprived of exercise[17].

STEREOTYPY

Dr Lori Marino

What we mean with stereotypy is an invariant restrictive and apparently purposeless repetition of motor patterns and you certainly see in many captive held animals who have no place to go or cannot exercise and certainly do not receive much stimulation from a rather severely impoverished environment. We see similar things in psychiatric conditions in humans as well[18].

Stereotypy in the brain has been observed in both humans and non-human animals. In the early 2000s it was estimated that about 85 million captive animals exhibited stereotypies.

With regards to elephants, the frequency is estimated to be about 47 to 85% in zoos of animals exhibiting stereotypies. In circuses 100% of animals, at least in one study, exhibited stereotypies.

[17] Symposium: Big Brains in Small Spaces, July 21 Big Brains in Small Spaces – the Impact of Confinement on the Brains of Cetaceans and Elephants - YouTube
[18] Ibid

In impoverished conditions and under chronic stress you get dysregulation of these pathways, and it reduces the effectiveness of the indirect pathway. This allows behaviours to come through and stereotypies to emerge, especially when this indirect pathway is disturbed. This is why you see excessive movements under conditions of stereotypies. So, the behaviour that you see is not separate from the brain.
If you observe behavioural *stare* and stereotypies, it means that there are disruptions in the level of brain circuitry. In this case, it involves the basal ganglia, in conjunction with the cortex.
Enrichment can be used to mitigate stereotypies, with directed enrichment in zoos, which is in fact an acknowledgment that the environment is impoverished; in fact enrichment in zoos usually is used to treat specific behavioural abnormalities.

The behavioural and clinical effects of captivity are often visible; a captive environment that is an impoverished environment is damaging the brain itself.

Captivity is directly stressful to the animal and robs the elephants of their most basic sense of autonomy. All of these factors including behavioural deprivation, developmental and social traumas, direct physical abuse, have dramatic negative impacts on the psychological health of captive elephants
These animals develop behavioural indications of chronic stress, which include abnormal repetitive behaviours such as those motor stereotypies of elephants
An overall decrease in behavioural complexity in these animals is visible, including a decrease in natural exploratory behaviours, and overall behavioural withdrawal.

Dr Heather Rally

Exposure to psychological stress has direct physiological consequences that, of course, impact the body's ability to function[19]. Captive elephants suffer from high rates of illness. Gastrointestinal disease is common in both species, as well as skin disease. One of the more essential things to note is a very high prevalence of infectious disease for both species in captivity. Captive individuals are affected by pathogens that are sometimes never even seen in the wild or are rarely seen or only seen under different circumstances. In many cases the pathogens are associated with known exposure to a physical or social stressor, or are otherwise correlated with some other condition from captivity.

[19] Dr Heather Rally, Wildlife Veterinarian, Symposium Big Brains in Small Spaces, July 21 Big Brains in Small Spaces – the Impact of Confinement on the Brains of Cetaceans and Elephants - YouTube

The cumulative negative impacts of captivity will lead to the overall deterioration of animal health over time and eventually, debilitation and premature death. Here are just some general statistics for comparison between wild and captive populations. The average life expectancy for example, for wild elephants is estimated at between 34 to 56 years. Yet, by contrast, the average life expectancy for captive elephants is approximately a mere 17 to 19 years. For orcas, the numbers are less concrete but for wild Orca, for example the life expectancy estimates range from an average of 30 to 50 years, whereas in captivity orcas have rarely ever lived longer than 30 years.

Dr Keith Lindsay

Dr Lindsay is a conservation biologist with 45 years' experience of working in Africa who has engaged with elephants in captivity for over a decade. Dr Lindsay has said that although an elephant can be kept alive in a smaller area than its natural range, that such captive conditions do not provide a reasonable quality of life comparable to a free-living existence. The elephant evolved in the richness of the African bush, feeding for 18 hrs / day navigating across multiple ecosystems. None of these conditions can be observed in captivity which causes progressive physical and psychological decline in the elephant. H*ead bobbing* and weaving have never been observed in the wild. Lack of movement and stimulation may cause elephants chronic loss of muscle tone and physical damage to bones and joints, as well as psychological damage due to the lack of continuous and diverse foraging challenges, social deprivation, and the frustration of being unable to make their own decisions[20].

Keeping elephants in captivity with the excuse that they offer educational purpose is not a good enough reason. There are many educational alternatives, including interactive multi-media displays, informative material, and life-size models as developed by, for example, modern museums. There are opportunities to visit wildlife reserves situation close proximity to most cities in. A large amount of these reserves are very offering competitive rates for South African families. South Africa has unique, rich biodiversity and an opportunity to connect people to the natural world and that learning about wildlife should then take place in natural areas rather than in the sterile conditions of a zoo or captive tourist facility or compound[21].

[20] Keith Lindsay Meeting between PREN and SANBI over Charlie the Elephant, 31st March 21
[21] Keith Lindsay Meeting between PREN and SANBI over Charlie the Elephant, 31st March 21

LEGAL PRESPECTIVE

The applicable legal framework around the keeping of elephants is the Biodiversity Act which would require reintegrating elephants held in confined small spaces such as zoo enclosures, into their natural environment. The constitutional court has recognised that animals have intrinsic value that animals are sentient beings and the welfare of animals, including animals in captivity, is intrinsically linked to conservation.

Animals in South Africa are protected by the Animal Protection Act, which prohibits any unnecessary suffering to animals. The Act should be broad enough to encompass the negative effects of the capture and the physical, emotional and psychological distress related to elephants in captivity.

South Africa has Norms and Standards which have recognised that the wellbeing of elephant must be ensured and furthermore, that there is a link between wellbeing and conservation. In paragraph 3 of the N&S which states that elephant are intelligent and have strong bonds that cannot be disrupted, any action which unnecessary causes stress to an elephant should be avoided and abuse to elephant prevented.

The South African N&S[22] for Zoos and Aquariums also seem to indicate that elephants cannot be kept in zoos, because the Norms and Standards requires that high standards of conservation and welfare are observed. Paragraph 8.2 specifies that the institutions have to provide optimal environment for the species in their care so that they can display natural behaviour and comfort. We know that for the wellbeing and welfare of an elephant, his physical and psychological requirements cannot be met in captivity.

NEMBA and Section 24 of the Constitution and is bound to respect and fulfil these rights. The Animal Protection Act[23] prohibits unnecessary harm to animals.

On the basis of the South African N&S and the APA and the Constitutional Court, the Pro Elephant Network suggests that elephant held in captivity should be reintegrated into the wild where possible and that no more elephants should be permitted to be held captive.

[22] National Environmental Management: Biodiversity Act: National norms and standards for management of elephants in South Africa
[23] Animals Protection Act (www.gov.za)

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WHY CANNOT ELEPHANTS THRIVE IN CAPTIVITY?

Statement	Comment	Reference
Captive elephants suffer from conditions not seen in the wild	Elephants in captivity shave shorter live spans, poor fertility Captive animals suffer stress	**Clubb et al 2008** Compromised survivorship in zoo elephants **Clubb et al 2009** Fecundity and population viability in female zoo elephants **Clubb and Mason 2002 RSPCA Report** A review of the welfare of zoo elephants **Wiese & Willis 2004** Calculation of longevity and life expectancy in captive elephants **Morgan & Tromborg 2007** Sources of stress in captivity
	Captive elephants frequently suffer from foot and joint diseases, arthritis, weight related diseases, infertility, herpes virus, TB	**Richman et al 1999** Novel endotheliotropic herpesviruses fatal for As and Af elephants **Lewis et al 2010** A Survey of elephant husbandry and foot health in N American zoos. **Mikota & Maslow 2011** Tuberculosis at the human-animal interface **Saddiq et al 2020** Degenerative Joint Disease **Mobasheri & Buckley 2020** Elephants mobility and captivity **Wendler 2019** (PhD) Foot health of As elephants in European zoos **Miller et al 2016** Housing and demographic risk factors impacting foot and muscoskeletal health in elephants in zoos **Lamglait et al 2015** Fatal encephalomyocarditis virus infection in an African savanna elephant (Loxodonta africana) in a French zoo
Zoo diets do not meet the nutritional requirements of elephants		**Ullrey et al 1997** Elephants: Nutrition and dietary husbandry **Chusyd et al 2021** Adiposity, reproductive and metabolic health, and activity levels in zoo Asian elephant (Elephas maximus)

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Captive elephants are not domesticated	Domestication involves artificial selection of desirable traits over multiple of generations, as is evident in dogs, horses, sheep and cattle, which all bear significant genetic, physical and behavioural differences from their wild counterparts. Trained or captive elephants are not genetically different from their wild counterparts.	**Russell N 2002** The wild side of animal domestication. **Wentzel & Hay 2015** The welfare status of elephants in captivity in South Africa
Captive elephants suffer compromised welfare Elephants in captivity cannot perform all their natural behaviour patterns	A captive environment cannot adequality meet the needs of elephants, neither physically, space wise, nor mentally or socially.	**Carlstead et al 2013** An epidemiological approach to welfare research in zoos **Hartley 2016** Assessing risk factors for reproductive failure and associated welfare in elephants in zoos **Meehan et al 2016** determining connections between the daily lives of zoo elephants and their welfare. **Jacobs 2020** The neural cruelty of captivity **Harris et al 2008** The welfare housing and husbandry of elephants in UK zoos **Williams et al** A review of current indicators of welfare in captive elephants **Lahdenperä et al 2019** Capture from the wild has long-term costs on reproductive success in Asian elephants **Kumar et al 2019** Non-Invasive Assessment of Physiological Stress in Captive Asian Elephants
Movement and exercise are vital for physical and psychological health	Elephants in captivity do not have the necessary space and stimulation the vitally need for physical and brain health	**Poole & Granli 2008** Mind & Movement
Space is one of the most	Elephants are built to walk vast distances	**McGreevy 2007** How much space does an elephant need? **Leighty et al 2010** assessment of the use of exhibit space and resources by African elephants

important aspects of elephant welfare		
Captive elephants frequently stereotype	Stereotyping has been shown to indicate poor welfare and is detrimental to physiological health	**Greco et al 2016** Using epidemiology to better understand stereotypic behaviour in elephants in zoos **Haspeslagh et al 2013** A survey of foot problems stereotypic behaviour and floor type in Zoo elephants **Mason & Latham 2004** Can't stop won't stop: is stereotypy a reliable animal welfare indicator? **Rees 2004** Low temperature cause increase in stereotypic behaviour in captive elephants **Mason 1991** Stereotypies and suffering
<u>Elephants are highly social, and need extended social networks offering a range of social relationships</u>	Elephants build social relationships that radiate out from the mother-offspring bond, through extended family, bond group, clan, population and beyond to strangers. Within this complex, multi-tiered social network, elephants exhibit strong and enduring relationships, some of which last a lifetime.	**Archie et al 2006.** Dominance rank relationships among wild female African elephants, *Loxodonta Africana.* **Moss CJ & Poole JH 1983.** Relationships and Social Structure of African Elephants. In: Primate Social Relationships; An integrated approach. R Hinde (Ed). Blackwell Publ. **Wittemyer et al 2007**. The socioecology of elephants: analysis of the processes creating multitiered social structures
	Social relationships are vital to elephant development and survival.	**Lee & Moss 1986** Early maternal investment in male and female African elephant calves.
Male elephants are sociable, just as females are	Males require social networks comprising a wide range of potential social partners, particularly including older, prime, males	**Goldenberg et al 2014** Controlling for behavioural state reveals social dynamics among male African elephants **Chiyo et al 2011** Association patterns of African elephants in all male groups: the role of age genetic relatedness. **Allen et al 2020** Importance of old bulls: leaders and followers in collective movements of all-male groups in African savannah elephants (*Loxodonta africana*)
Elephants have complex emotional and cognitive abilities	Elephants have excellent long-term memory. They recognize individuals; they recognize the social roles and	**Bates et al 2008** Do elephants show empathy **Byrne & Bates 2009** Elephant cognition in primate perspective **McComb et al 2000** Unusual extensive networks of vocal recognition In African elephants

	intentions of others and empathize with others.	**Irie & Hasegawa** 2009 Elephant psychology:
	They are self-aware	**Plotnik et al 2006** Self recognition in an Asian elephant
	They have insightful problem solving ability	**Foerder et al 2011** Insightful Problem Solving in an Asian elephant

	Summary / Description	**FURTHER OBSERVATIONS**	**REFERENCES**
1	Falk et al., 2007, is being widely heralded as the first direct evidence that visits to zoos and aquariums produce long-term positive effects on people's attitudes toward other animals. This study concludes that Falk et al. 2007, contains at least six major threats to methodological validity that undermine the authors' conclusions.	There remains no compelling evidence for the claim that zoos and aquariums promote attitude change, education, or interest in conservation in visitors.	Lori Marino et al, 2010. Do Zoos and Aquariums Promote Attitude Change in Visitors? (PDF) Do Zoos and Aquariums Promote Attitude Change in Visitors? A Critical Evaluation of the American Zoo and Aquarium Study (researchgate.net)
	Collection of spatial and behavioural data from collared captive female elephant, once released. She had three calves of her own, and formed a social unit with another female and her calf that were later released from the same captive herd.	Authors recommend that release to the wild be considered as a management option for other captive female elephants.	Kate Evans et al, 2013. The Release of a Captive-Raised Female African Elephant (Loxodonta africana) in the Okavango Delta, Botswana
	This research looks at the perpetuation of the myths that help keep zoos in existence: that they house and breed endangered animals and are necessary for the survival of these species. Both claims are false but they make a story that all too many people are willing to believe. Zoos need to sustain the mythology because it keeps them in business.	The earliest wild-animal keeping was probably for religious reasons, later becoming a sign of power and wealth, but it was in 1847, when London Zoo opened to	Craig Redmond, 2010. Zoos: Failing animals, conservation and education. (PDF) Zoos: Failing animals, conservation and education (researchgate.net)

		the public after 20 years as a collection for scientific study, that the real turning point came.	
	Feeling connected to nature has been shown to be beneficial to wellbeing and pro-environmental behaviour. Zoos cannot connect us with nature	General nature contact and knowledge based activities are often used in an attempt to engage people with nature.	Ryan Lumber et al, 2017. Beyond knowing nature: Contact, emotion, compassion, meaning, and beauty are pathways to nature connection
	Neuroscientists have recently asserted that human and nonhuman animals share comparable brain structures and processes that govern cognition, emotion, and consciousness.	The study contends that psychosocial data on the mental, emotional, and social functioning of wildlife societies and their members should be included in wildlife assessments and policies.	Bell Rizzolo, Bradshaw, 2019. Nonhuman Animal Nations: Transforming Conservation into Wildlife Self-Determination Nonhuman Animal Nations: Transforming Conservation into Wildlife Self-Determination | Request PDF (researchgate.net)
	Abnormal behaviours have been systematically observed in African elephants (*Loxodonta africana*) in human-caused altered social contexts. Such disruptions impair normative socially mediated neuroendocrinological development leading to psychobiological dysregulation that expresses as non-normative behaviour.	There is a concrete link between effects of human disturbance on social context, and short- and long-term neuroethology	Bradshaw et a, 2007. How Elephants are Opening Doors: Developmental Neuroethology, Attachment and Social Context
	Though conditions of captivity vary widely for humans and for other animals, there are common ethical themes that imprisonment raises. This volume brings together scholars,		Lori Gruen (ed.), The Ethics of Captivity, Oxford University Press, 2014 - Kennedy Institute of Ethics Journal (georgetown.edu)

	scientists, and sanctuary workers to address these issues in fifteen new essays.		
	In decades of studying the brains of humans, African elephants, humpback whales and other large mammals, it emerged the brain great sensitivity to the environment, including serious impacts on its structure and function from living in captivity.	Neuroscientific research indicates that living in an impoverished, stressful captive environment physically damages the brain. These changes have been documented in many species, including elephants, large primates, large marine mammals, rodents, rabbits, cats and humans.	Bob Jacobs, 2020. The Neural Cruelty of Captivity: Keeping Large Mammals in Zoos and Aquariums Damages Their Brains | Science Times
	Old elephants who have spent their entire life in captivity can successfully retire and free-roam in a sanctuary or wild-like environments.	In 2004, the Detroit Zoo took a bold step and retired two elephants to sanctuary for ethical reasons. Wanda and Winky spent most of their fifties in sanctuary in California before they passed away (Winky lived to be fifty-six, Wanda fifty-seven). Ron Kagan, the director of the Detroit Zoo, set an ethical trend and other zoos	Lori Gruen, 2016. Shifting towards an ethics of Sanctuary. From Suffering to Sanctuary | Zoos & Aquariums | Center for Humans & Nature (humansandnature.org)

		also retired their elephants recognizing that the well-being of elephants is compromised in captivity.	
	Neuroscience has demonstrated that all mammals share a ubiquitous developmental attachment mechanism and a common stress regulating neurophysiology. Now, a wealth of human–animal studies and the experiences of human victims of violence are available to help elephants and other species survive.	Social trauma: early disruption of attachment can affect the physiology, behaviour and culture of animals and humans over generations.	Bradshaw et al, 2005. Elephant Breakdown
	Africa elephants who experience one or more traumatic events, injury, capture, translocation, maternal separation, exhibit damaged social and emotional functioning consistent with symptoms found in humans survivors of trauma (Bradshaw)	Two-month field study at two elephant sanctuaries in Thailand	Bell Rizzolo J. et al, 20016. Prevalence and Patterns of Complex PTSD in Asian Elephants (Elephas maximus)
	Prolonged captivity progressively deteriorates elephant welfare	A novel tool was created to assess the welfare of captive elephants using behavioural indicators of welfare. The tool was designed for use by elephant keepers to provide a rapid, reliable and valid way to monitor changes in the welfare	Lucy Asher et al, 2018. Developing Behavioural indicators, as part of a Wider Set of Indicators, to assess the Welfare of Elephants in Zoos

		of elephants over time.	
	There is an opportunity for rescuing, rehabilitating and reintroducing captive elephants to the wild with the help of the traditional expertise of a mahout culture that has been elephant-keeping for centuries.		Liv Baker et al, 2020. Asian elephant rescue, rehabilitation and rewilding
	AZA had concluded in its *own* executive summary that: 'Little to no systematic research has been conducted on the impact of visits to zoos and aquariums on visitor conservation knowledge, awareness, affect or behaviour'.		Marc Bekoff, 2006. Animal Emotions and Animal Sentience and Why They Matter: Blending 'Science Sense' with Common Sense, Compassion and Heart Chapter 3 in: Animals, Ethics, Trade: The challenge of Animal Sentience. Jacky Turner & Joyce D'Silva (Eds). Earthscan London
	The extinction crisis and the pandemics of the past few centuries have killed and continue to claim the lives of trillions of animal victims, including elephants and humans.	Population extinctions share a common cause with pandemics – namely, humans; they offer a common solution: putting an end to anthropocentrism.	Adrian Treves, 2020. Elephants and Pandemics, Commentary on Baker & Winkler on Elephant Rewilding
	Despite greater demand for 'ethical tourism' and awareness of the distress caused by elephant rides, the vast majority of captive elephants in Asia still endure widespread and lifelong cruelty, living in severely inadequate conditions.	Distressing cruelty to captive elephants is consistent in all countries. It involves separation of mothers and calves, harsh training methods, restriction of movement, poor nutrition, limited or no veterinary care,	Dr r Jan Schmidt-Burbach for the World Animal Protection, 2020. Elephants, not commodities. Taken for a ride.

		social deprivation and punishment.	
	Elephants have complex emotional and cognitive abilities	Elephants have excellent long-term memory. They recognize individuals; they recognize the social roles and intentions of others and empathize with others.	Naoko Irie et al, 2009. Elephant psychology: What we know and what we would like to know
	In the wild, elephants exercise their feet by walking on rocks, digging around and by rubbing their fat pads against the ground. These activities keep their feet moist and their fat pads stay supple.	Hard surfaces with floors covered in urine and faeces can cause infections around the pad. A cracked or infected fat pad can't absorb pressure effectively making the outside part of the foot more prone to diseases.	Olga Panagiotopoulou, 2017. Why elephants kept in captivity suffer from sore feet (theconversation.com)
	The main risk factors for musculoskeletal disorders included time on hard substrate and space experienced in indoor/outdoor exhibits.	Elephants exposed to hard surfaces for four hours each day were more likely to develop joint stiffness or lameness.	Michele A. Miller, 2016. Housing and Demographic Risk Factors Impacting Foot and Musculoskeletal Health in African Elephants [Loxodonta africana] and Asian Elephants [Elephas maximus] in North American Zoos (plos.org)

	Captive environments cannot meet the needs of elephants	The restrictions that captivity imposes on an animal's behaviours are increasingly recognised as being deleterious to cognitive development, normal social development, and, later in life, on reproduction and health	Knight J. 2001. Animal data jeopardised by life behind bars. Nature, 412:669. Animal data jeopardized by life behind bars | Nature
	Elephants have a highly developed communication system using all their senses in a wide range of tactile, olfactory and visual signals, seismic and acoustic communication		Elephant Voices, Elephant Communication Elephant Communication (elephantvoices.org)
	Because elephants have never been selectively bred over generations by their human captors, their genetic makeup is the same as wild elephants and so are their needs, behavioural responses, and neurology.	Captive environments, with their inherent limitations, remain unsuitable for elephants because they fail to meet their complex physical, social, and psychological needs.	Roots C. Domestication. Greenwood Press; 2007.
	Abnormal behaviour in captive elephants include self-mutilation, anxiety, stereotypies, and aggression.		C.M. Doyle, personal communication, November 4, 2020.
	Wild African elephants, who are under siege due to poaching, habitat loss, and social breakdown from poaching, display symptoms associated with human Post Traumatic Stress		Bradshaw G.A., Schore A.N., Brown J.L., Poole J.H. & Moss C.J. 2005. Elephant breakdown. Nature, 33: 807.

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	Disorder (PTSD), including abnormal startle response, depression, unpredictable asocial behaviour, and hyper-aggression.		
	Captive elephants have limited or no freedom to make meaningful independent choices about their daily activity or social companions and no significant level of autonomy over their lives, both of which are necessary for their welfare		Vanitha V., Thiyagesan K. & Baskaran N. 2016. Prevalence of sterotypies and its possible causes among captive Asian elephants (Elephas maximus) in Tamil Nadu, India. Applied Animal behaviour Science
	A rapid rise in the number of captive African elephants (Loxodonta africana) used in the tourism industry in southern Africa and orphaned elephants in human care has led to concerns about their long-term management, particularly males. One solution is to release them into the wild	There are no significant short-term welfare problems for the released elephants or recipient population.	Kate Evans et al, 2013. The Social and Ecological Integration of Captive-Raised Adolescent Male African Elephants (Loxodonta africana) into a Wild Population
	Welfare assessment including behavioural and cognitive responses, should play a central role in evidence-based elephant management.	Indices suggested as valid, partially validated, include: measures of preference/avoidance; displacement movements; vocal/postural signals of affective (emotional) state; startle/vigilance; apathy; salivary and urinary epinephrine; female acyclity;	Georgia J. Mason et al, 2009. How Should the Psychological Well-Being of Zoo Elephants be Objectively Investigated?

		infant mortality rates; skin/foot infections; cardio-vascular disease; and premature adult death.	
	Serious health problems and often a decreased life span in captive-held elephants are well documented.	Captive elephants are also subject to infectious diseases. A highly fatal haemorrhagic disease, the Endotheliotropic Elephant Herpesvirus (EEHV) occurs in both Asian and African elephants in captive situations, with some cases found among Asian elephants in their natural range countries. The disease particularly devastates neonatal and weaning-age elephants in captivity	Clubb R., Rowcliffe M., Lee P., Mar K.U., Moss C. & Mason G.J. 2008. Compromised survivorship in zoo elephants. Science, 322:1649. Reid C.E., Hildebrandt T.B., Marx N., Hunt M., Thy N., Reynes J.M., Schaftenaar W. & Fickel J. 2006. Endotheliotropic elephant herpes virus (EEHV) infection. Veterinary Quarterly, 28(2):61-64.
	Captive elephants may suffer arthritis, osteoarthritis, hernia (Hernia perinealis), swelling of the knee joints (Bursitis praepatellaris), skin calluses (Tyloma olecrani), and abscesses.	Musculoskeletal impairments are one of the major health issues in captive-held elephants, including degenerative joint disease and low bone density	Kuntze A. 1989: Arbeitsbedingte Krankheitsbilder: Hernia perinealis, Bursitis praepatellaris und Tyloma olecrani bei Zirkuselefantinnen. Verh. Ber. Erkrg. Zootiere, 31:185.

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	Blackleg (bacterial inflammation with necrosis) and foot problems, such as pathological lesions in the pads and nails, split nails, abscesses, torsion, ulcerations, and overgrown cuticles, are common in captive-held elephants because of inactivity and lack of access to natural substrate to keep foot pads and nails supple and naturally trimmed.		Wendler P. 2019. Foot health of Asian elephants (Elephas maximus) in European zoos. Dissertation Vetsuisse faculty, University of Zürich Saddiq H. M. U., Ali R. H., Amjad M. T., Jaleel S., Ali S. M., Fatima N & Ullah S. 2020. Post-mortem examination of a female elephant suspected of having Degenerative Joint Disease: A case report. Advances in Animal Veterinary Science, 8(10): 1009-1012. http://dx.doi.org/10.17582/journal.aavs/2020/8.10.1009.1012

RECOMMENDATIONS

We are aware that every elephant is different and should be treated differently. Some cannot go back to the wild but could be given more autonomy, away from human exploitation. Others seem to be compromised but then, show to be able to recover in an incredible way; others need to bond to captive elephants who were exploited but in a more natural environment, maybe wild born, and then they can all be reintegrated together. Only elephant experts can put together this complex puzzle, to make it work. This is happening, slowly but successfully.

The Elephant Reintegration Trust is a member of the Pro Elephant Network they have successfully reintegrated elephants utilized in the tourism sector for elephant backed safaris back into a wild system. Ingo Schmidinger, another member of PREN and the co-founder of iScapes, played an important role with the rehabilitation and relocation of Kaavan, a solitary elephant from a zoo in Pakistan to a sanctuary in Cambodia.

It is really a matter of Taking Elephants out of the Room[24], *one at a time*[25].

Each case is a lesson for wider thinking. It would be important to select areas and respectable sanctuaries in more countries and regions so that there are better places for elephants to go to. These are some of the ideas that one can work on, so that the rare successes like those of Kavaan can built upon[26].

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[24] Recommendations from Elephants in Captivity Under the Spotlight: Taking Elephants out of the Room - EMS Foundation
[25] Michelle Franko, Elephant Care, Husbandry Specialist and Advocate
[26] Dr Keith Lindsay, on Kaavan the Elephant