

The unnatural lives of elephants in captivity:

THE CASE OF DUBLIN ZOO

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After graduating in Biological Sciences from London University, Rob Atkinson started his career at London Zoo where his duties included work as an elephant keeper. He moved into academia and was awarded an MSc and a doctorate in behavioural ecology at Oxford University. He was Head of the Animal Department at Woburn Safari Park (a collection that included elephants) and then Head of Wildlife at the RSPCA, where an early achievement was to initiate and fund a project looking at the welfare of elephants in zoos, the first of its kind and scale. He was appointed Chief Executive Officer of The Elephant Sanctuary in Tennessee, and now works as a freelance consultant, including until recently to the Pangea Trust, which seeks to establish a sanctuary for elephants in Mediterranean Europe.

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Andrew Kelly holds a first-class honours degree in zoology from the University of Glasgow and a doctorate in evolutionary ecology from the University of Leeds. He has been a Research Fellow and Honorary Lecturer at Queen's University Belfast and a post-doctoral researcher at Lancaster University, the University of Glasgow and the Scottish Universities Environmental Research Centre (SUERC). In the animal protection charity sector, he has held senior posts as Wildlife Centre Manager and Head of Wildlife, both at the RSPCA, Chief Executive Officer of the Irish SPCA and Director of Freedom for Animals. He was instrumental in evaluating the post-release survival of released rehabilitated wildlife, and with like-minded organisations successfully campaigned for a ban on the use of wild animals in circuses, a ban on fur farming and a commitment by the Irish government to introduce legislation on the trade in wild animals as pets. He has worked with governments at national and international level, through both leadership roles and as a senior advisor to Humane Society International.

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Executive Summary

Introduction

The lives of elephants in zoos are very different from those lived by wild elephants, and inevitably there are negative consequences for welfare. Basic elements of wild elephant behaviour have been known for decades, yet zoos seemed to become aware only from around 2000. Natural history provides no justification for any of the highly disruptive and destructive practices common to management – particularly management for breeding – of elephants in zoos. Neither does it justify keeping elephants in temperate climates on tiny vegetation-free spaces. It comes as no surprise that welfare in zoo elephants is poor. In recent years zoos have made improvements in easily addressed areas, such as obesity and foot health, but have almost entirely avoided the major challenges inherent in zoos: inadequate space, splitting apart and moving elephants, and climate.

This report had its origins in a letter sent in February 2025 to the Irish government, expressing concern for the welfare of the Asian elephants housed at Dublin Zoo. We believe Dublin Zoo's elephant programme to be typical of those across Europe and North America, and that it is highly likely that many of our observations and conclusions apply widely.

We believe it is unacceptable for strategic publicity to gloss over poor elephant welfare, especially when it promotes and falsely justifies the persistence of unethical procedures. Hence, much of our report is pinned to the claims made by zoos,

particularly exemplified by Dublin Zoo. Our criticisms are aimed at institutions, not the elephants' keepers.

Recent deaths from EEHV at Dublin Zoo

Dublin Zoo has recently (2024) lost two young female elephants to the elephant endotheliotropic herpesvirus (EEHV). This disease, which accounts for over 60% of the deaths of young Asian elephants in zoos, is a common and ancient infection of wild elephants. In the wild, however, there is no evidence that it causes the damage it does in captivity, as the virus has been present in elephant populations for millennia. It is likely that natural social and ranging behaviour, which in the wild occurs on a far bigger scale than it can at Dublin Zoo (or any other zoo), confers immunity on young wild elephants. In addition, stress, which is linked to compromised immunity, is a likely factor. In November 2023, Dublin Zoo disrupted its group by transferring four elephants to Cincinnati Zoo, which was included in the top 10 worst zoos for elephants in North America in 2024. This would likely have been distressing for the four elephants that were transported to Cincinnati and those that remained at Dublin Zoo. Seven months later in June 2024, a young male elephant was transferred to Dublin Zoo from Chester Zoo. Just two weeks later Avani (aged 7) and Zinda (aged 8) had died from EEHV, and three older elephants became sick. There is no conservation imperative that requires the Zoo to keep elephants captive to help cure a disease that largely only affects captive elephants. Funding research in the range states would be far more effective, if indeed EEHV poses any significant threat to wild elephants.

Dublin Zoo's culture of moving elephants

The 2023/24 upheavals were far from unique. Dublin Zoo has long been a revolving door for elephants; of the 30 who have lived there, 13 have been relocated to other zoos over the past 50 years with ten moved since 2005. The deliberate splitting of social groups and the frequent transfer of animals between collections is likely to elicit significant distress in both African and Asian elephants, species famous for their strong societal bonds and emotionality. Dublin Zoo is part of a trade that moves elephants repeatedly between collections for breeding, even though research has confirmed that transport of elephants is such a potent stressor that it significantly increases the likelihood of mortality, with long-lasting effect. The Zoo itself has noted the distress caused by separating elephants.

Standards of care

Despite Dublin Zoo's claims that the management of its elephants allows natural elephant behaviour, comparison with decades of field research demonstrates that it does so only to the most trivial extent. For example, breeding elephants prematurely, keeping a male without other males, and denying mate choice to females, the separate but intertwined development of normal male and female sociality, and the variety of an extensive foraging area and a naturally selected diet find no justification in research into wild elephants.

Dublin Zoo's claim to provide "world-class care" is based on a very low threshold. For example, the Zoo is a member of both the British and Irish Association of Zoos and

Aquariums (BIAZA) and the European Association of Zoos and Aquaria (EAZA). Both stipulate a minimum outdoor enclosure size of 0.3ha for a collection of elephants, less than half the size of a soccer pitch and a tiny proportion of a natural home range. Similarly, Dublin Zoo's elephant facility may meet the requirements of the Irish Standards for Modern Zoo Practice (ISMZP), but it is also a low bar. The ISMZP fails to tackle the most significant problems: the lack of quality space; the inability of elephants to forage naturally on natural foods; the impossibility of providing for species-typical socio-dynamics including fission-fusion and failure to accommodate the long, complex development of males' social behaviour. Climate is another likely block on reaching acceptable standards of welfare.

Like most elephant-keeping zoos, Dublin Zoo focuses on training, which is to an extent an admission that elephants' environment is inappropriate. The zoo reports that the separation of elephants for training purposes causes distress. Worryingly, although they avoid explicit description, the ISMZP allow for the persistence and potential use of the elephant hook, a heavy and sharp tool obviously designed for the infliction of pain and fear.

Dublin Zoo calls on the expertise of "*specialist elephant care consultants*", yet to the best of our knowledge these consultants' elephant experience is limited to captivity. Field-based scientists whose concept of well-being is drawn from decades of experience studying wild elephants, have a very different perspective on captivity and their knowledge should be drawn on.

Lifespan

One of the infamies of zoos that breed Asian elephants is that a baby born into a European zoo is expected to die at a younger age than one born in a timber camp in Myanmar or in Amboseli National Park in Kenya, where comprehensive demographic records allow comparison to semi-wild and wild conditions. The latest analyses confirm that there has been no significant improvement in the lifespans of zoo-born elephants in decades. Of the nine elephants born at Dublin Zoo, all since 2007, two are already dead.

Size of enclosure

Dublin Zoo refers to its elephant enclosure, the Kaziranga Trail, as "a vast habitat", even though it covers less than a hectare and not all is always available to all elephants at any one time. An elephant could cover every square metre in little more than an hour. The exhibit is about the UK median size, but half of the minimum proposed in a UK government's consultation.^a It is 1/8th the size of the largest elephant facilities in British and Irish zoos, 1/20th the size of the largest elephant facilities in Europe and Australia, and less than one percent of the size of elephant sanctuaries in North and South America. Natural home ranges of wild Asian elephants are tens of thousands of

a. Secretary of State's Standards of Modern Zoo Practice for Great Britain (Consultation), 2022

times larger; Kaziranga National Park in India, for which the exhibit is named, covers 430km² and is home to 1,900 elephants.

Size for size, Dublin's elephant exhibit is equivalent to a group of adult humans spending their entire lives in an area the size of a singles' tennis court.

Climate

Wild Asian elephants evolved and live in tropical and subtropical climates. The average yearly temperature at Kaziranga National Park is 23.7oC, which is 14.3oC higher than that of Dublin Zoo's Kaziranga Trail. Dublin Zoo must confine its elephants indoors on some nights due to low temperatures. It is likely that the challenge of maintaining homeostasis in cold climates negatively affects functions such as circulation, digestion, and the immune response. Scientists have cited sub-optimal climate as a possible cause of high mortality in elephants kept in zoos.

Dublin Zoo's elephant exhibit is almost certainly harmful to the environment. The elephants consume huge amounts of food, probably sequester little carbon and release the greenhouse gas methane. Their barns require a lot of artificial heating, which adds to the carbon cost of energy generation for the whole facility. In contrast, wild Asian elephants need no such heating, and capture carbon through their roles in seed dispersal and structuring of vegetation communities, and the way their dung is incorporated into soil.

Sentience

The emotional capacity of Asian and African elephants is well-known. All elephant species are self-aware and show interest in their own lives and those of others. They grieve and have been known to bury their dead. They are aware of and respond to the emotional and physical distress of others, including trying to rescue them from perceived danger. There has been intense interest, manifested in judicial actions in North and South America, in elephants' right to a special status that protects them from being kept in conditions that cause their needless suffering. Even if Dublin Zoo will not recognize the special status of elephants, it must surely face up to an obligation to fully recognise and cater for the species' needs. By ignoring biology so obviously it appears that Dublin Zoo does not take this responsibility seriously. The famed intelligence of elephants which evolved to enhance the survivorship of groups and individuals in the wild, has vastly restricted opportunities for expression in the impoverished environments offered by facilities such as Dublin Zoo.

Elephant society

Despite its claims, the way Dublin Zoo manages its male and female elephants is nothing like what happens in the wild. Wild Asian elephant females live in "fission-fusion" societies, maintaining decades-long associations with a complex and dynamic system of relatives and "friends" with whom they join, move away from and rejoin. In contrast, Dublin splits elephants from their groups and separates them forever. The Zoo also ignores nature when managing its males. In the wild, pubertal male

elephants disperse from their natal groups when 10-15 years old and form bachelor groups as they progress through young adulthood. As adults they regularly consort amiably with other males and, often, with females. This natural, dynamic male elephant society is nothing like that experienced by, or possible for, the solitary male Aung Bo at Dublin Zoo, who arrived from Chester Zoo in June 2024.

Five males have been born at the Zoo, of which only one is older than 11 years. One ominous outcome of breeding in zoos can be the negative effect on zoo-born males' sexual behaviour and function; it remains to be seen whether this will be the case for males born at Dublin Zoo.

Breeding elephants at Dublin Zoo

Dublin Zoo is a member of the EAZA Ex Situ Programme (EEP) for Asian elephants. This programme supports extreme and, in our opinion, unethical measures such as a "breed and cull" strategy, splitting of groups and repeated transport of males. It is scientifically established that zoos induce very premature puberty in females and males. Shockingly, the EEP studbook keeper wants to maximise the early breeding opportunities with a proposal to breed females from age eight, many years before they normally would in the wild.

Dublin Zoo's female calf Asha started her first oestrous cycle when she was less than four years old, close to the earliest recorded. Dublin first introduced Asha to a breeding bull a little over a year later. The male's sexual interest continued for some years, and Asha became a mother aged 9 years 3 months, far younger than wild Asian elephants or semi-wild elephants in Myanmar. Asha's calf Zinda died of EEHV aged 7 years 9 months and, just over a month after Asha had given birth when she had hardly recovered from a genital infection, Dublin Zoo allowed Upali to mate with her again.

Feeding and ranging behaviour

Dublin Zoo claims that its elephants walk ≈ 10 km a day, similar to distances in the wild (although the methodology behind this claim is questionable). But those 10km are squeezed into an enclosure with a mean width of ≈ 100 m. There is no equivalence of experience between an elephant ranging freely in the wild and one trekking back and forth over the same ground in Dublin Zoo's tiny enclosure.

Wild Asian elephants feed on dozens of species of living grasses, shrubs, climbers, herbs and trees, with strong seasonal variation. Each day they eat 150kg or more of leaves, grass, tubers, bark, roots, flowers, fruits, vines and twigs. They engage teeth, head, trunk and trunk tip, feet and their whole body in such foraging behaviour. In contrast, the elephants at Dublin have an unvarying diet with concomitantly reduced opportunities to express natural feeding behaviour. A lack of dietary variety markedly reduces the robustness of elephants' intestinal microbiota networks and is suspected to increase the likelihood of digestive problems. Most elephants in zoos tend to be overfed, resulting in an obesity that carries additional health issues.

Justifications for keeping elephants at Dublin Zoo

Conservation, education and research are presented by Dublin Zoo as justifications for keeping elephants captive. Yet evidence shows these claims are at best weakly supported and far more often, unfounded. There is no substantive proof that the presence of elephants in zoos contributes significantly to public or academic knowledge of elephant biology or to their conservation in the wild.

There is no legitimate conservation reason to breed elephants in Western zoos such as Dublin Zoo, whether to produce animals for display or for reintroduction.

Governments, international non-governmental organisations and elephant conservation practitioners have all indicated that they do not regard breeding elephants in zoos as legitimate forms of elephant conservation.

The evidence we have seen suggests that money donated by Dublin Zoo to conservation programmes for wild Asian elephants is minimal and intermittent. Certainly, it is tiny compared to the budgets of genuine conservation programmes and indeed to the costs of building and running the Zoo's elephant facility.

Changing times

The public today appears unpersuaded by outdated zoo arguments. Sir David Attenborough sums up the new outlook: *"Thankfully, we now have a much deeper understanding of the needs of elephants and we have a choice about how to care for them. They need to be in the company of their own kind to build lasting relationships, and they need space to live their lives."*

Traditional zoos such as Dublin Zoo with old-fashioned programmes and tiny enclosures are at risk of falling behind. The number of elephants and elephant keeping facilities in the UK and Ireland has dropped from 72 elephants in 21 zoos in 1995 to 54 in 11 zoos today.

The UK government has been considering for many years the future of elephants in zoos. Worldwide, several jurisdictions have taken steps to stop the keeping of elephants in zoos.

Ireland has the chance to lead on elephant welfare in Europe and beyond. Increasingly, the importance of abundant, diverse, natural space to elephant welfare is being recognised by captive facilities; where provision of such quality space is not possible, facilities have chosen to close their exhibits. Dublin Zoo could help itself and elephants by endorsing and adopting this approach.

Conclusions and recommendations

Sub-optimal well-being is the proven outcome of a seemingly unbridgeable disparity between what elephants evolved to be and what zoos allow them to be. Zoos have been slow to learn the lessons supplied by research, and improvement over the last twenty

years or so, such as it is, is only in easily addressed areas. Zoos have proven themselves unable to overcome the problems caused by factors inherent to their operations: inadequate space, splitting apart and moving elephants, and, likely, climate.

Many zoos have stopped keeping elephants, and in the British Isles the trend in numbers of both elephants and facilities is downward. But for zoos that continue to keep elephants, breeding for conservation is often stated as the main goal. Some of the practices associated with strategic breeding, such as mating immature females, the way males are managed, and frequent separation and transport, are truly shameful, the more so considering that the welfare consequences of these actions are well-known. Unsurprisingly, there is no support for captive breeding amongst elephant conservationists. Neither is there evidence for any meaningful impact from education or research based on keeping elephants in zoos. We did however find an industry built around claims in each of these areas that zoos have an important role to play.

Expansive, diverse space, two orders of magnitude greater than typical zoo facilities such as Dublin Zoo's, is a likely key to improving welfare for those elephants for which a return to the wild is unethical or impossible. This is recognised by an increasing number of organisations, including some zoos.

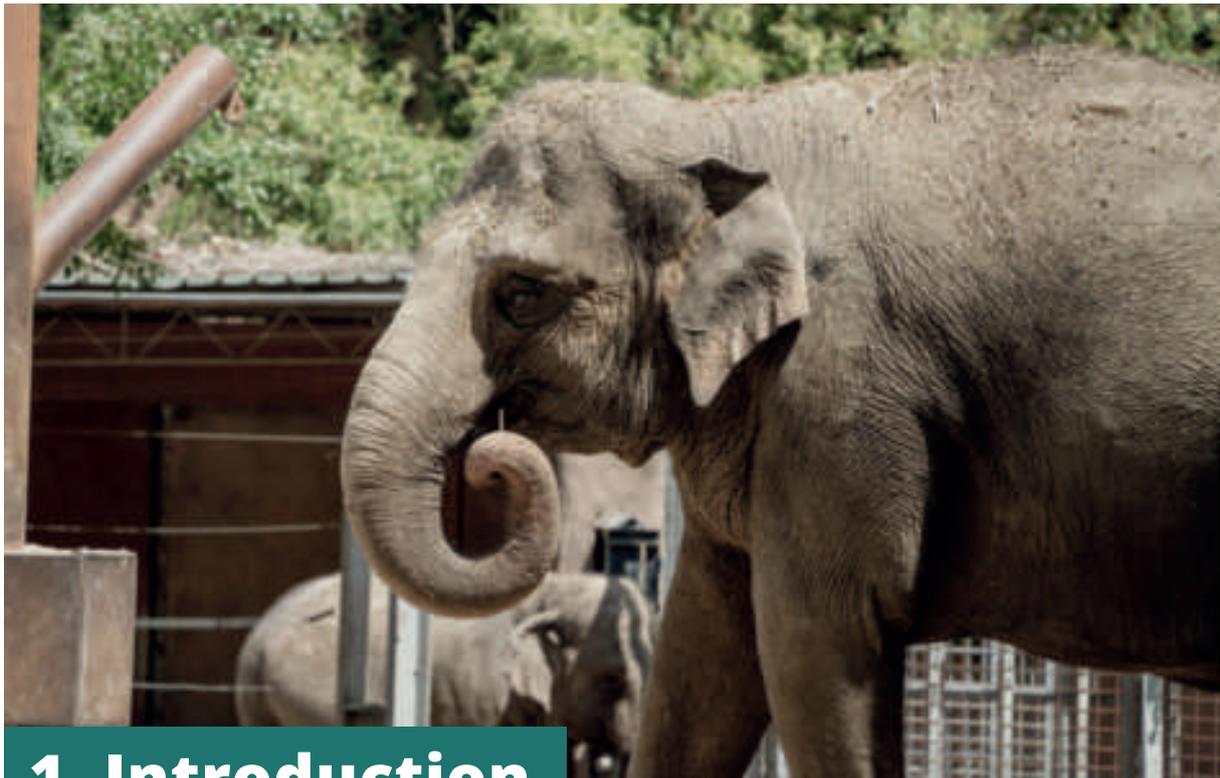
Our recommendations are:

1. We call on governments to introduce a phasing-out of elephants from zoos (and, of course, circuses and other facilities that fail to recognise elephants' needs), starting with an immediate prohibition on the breeding of elephants and an immediate prohibition on their import.
2. We call for the existing captive population to be treated in accord with the ethics underlying these recommendations.
3. We call for any facility that keeps elephants which claims it is assisting conservation of wild elephants to evaluate that claim using appropriate scientific measurement, to subject these analyses to independent scientific scrutiny, and to publish the outcomes.

Dublin Zoo is the only zoo on the island of Ireland that keeps elephants. The implementation of these recommendations would, we believe, be momentous, and have only positive effects on elephant welfare, reputation and finances.

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1. Introduction

Elephants in zoos live very different lives from those of wild elephants, and inevitably, there are negative consequences for welfare. Key elements of wild elephant behaviour have been known for decades, yet zoos have appeared unaware of basic natural history for most of that time. Even in recent years, when they admit to awareness, they appear to ignore it.

Research into wild elephants provides no justification for mating elephants when they are little more than juveniles, keeping males solitarily, or denying mate choice to females. It provides no rationale to support the frequent breaking up of groups or denying elephants the opportunities to manage and maintain multiple, long-term relationships between family and friends involving dozens of individuals. There is no convincing scientific justification for keeping elephants, which naturally cover hundreds of square kilometres of diverse habitat, in vegetation-free spaces so small they can walk across them in a minute. Elephants evolved to find, prepare and eat many different parts of scores of species of wild plant, an abundance correlated to the diversity of their gut biomes and to their health, yet captivity denies them the great majority of opportunities to feed and forage naturally. Elephants are sparsely haired mammals that naturally live in the tropics and subtropics and are obviously maladapted to spending long periods outdoors in cold weather or indoors in small barns.

A 2023 paper written primarily by affiliates of the zoo industry admitted zoos have learned the lessons of the wild only recently: *“Zoo elephant husbandry has undergone*

distinct changes during the past 25 years. In particular, a shift from 'direct contact' to 'protected contact' systems began with a concomitant abandoning of physical coercion and chaining... The awareness of the relevance of social structures of elephant herds led to a different approach to group composition and kin separation".¹ It is clear that 1998 is rather late in the day to start learning about elephants' group structure, or that physical coercion has no role in elephant keeping.

Over the last 25 years, additional scientific studies have supported the conclusion that welfare in zoo elephants is poor. Zoos admit to a history of low standards of elephant care but insist that it's better now and increasingly based on observations of wild elephants.^b There have indeed been some – long overdue – improvements. For instance, some zoos have reduced mortality from foot disease, having recently realised that keeping elephants on concrete, standing in their own urine, for hours is harmful. The zoo bodies, such as BIAZA and EAZA, have taken steps to reduce the time their member zoos should chain elephants, having noticed the correlation between chaining and stereotypic behaviour. But serious underlying problems remain. Even today, an Asian or African elephant baby born into a European zoo can be expected to die sooner than one born in a timber camp in Myanmar^c or in Kenya's Amboseli National Park, where comparisons with semi-wild and wild elephants, respectively, can be made. The latest analyses – see section 2.4 Lifespan – confirm that there has been no significant improvement in the lifespans of zoo-born elephants in decades.

This report had its origins in a letter sent in February 2025 to the Irish government, expressing concern for the welfare of the Asian elephants housed at Dublin Zoo. It would be unfortunate if we give the impression that Dublin Zoo is a worst-case scenario. On the contrary, our experiences suggest to us that Dublin Zoo's elephant management may be typical of elephant programmes across Europe and North America. Therefore, we felt that highlighting elements of Dublin Zoo's programme could illuminate the same processes in other zoos.

We want to emphasise that many of the welfare concerns we raise do not arise from carelessness or intentional cruelty. Factors such as tiny spaces, splitting groups, and frequent transport are practically inevitable in zoos, and especially where breeding is considered a vital function of the programme. The negative consequences are unintended but one must conclude that they are not considered serious enough to stop the programme or even prompt profound changes.

b. Zoos' engagement with their problems only began to gain momentum after the publication of the report by Ros Clubb and Georgia Mason in 2002, by which time knowledge of wild elephants was already reflected in a vast database of scientific papers, popular scientific and historical books, children's textbooks, documentaries and media articles.

c. Elephants of the Myanmar Timber Enterprise.

We appreciate that some facilities may make conscious, tangible and significant efforts in attempting to bridge the gap between wild and captive conditions. We refer particularly to efforts to provide for natural elephant society, including the differential between the lives of males and females, and to allow for greater expression of natural movement. We encourage such facilities to substantiate their assertions and publicise the effects of their changes within the zoo industry.

Over the years, Dublin Zoo, as has been the case with other zoos,² has received considerable government funding,^{3,4} but we believe that Dublin Zoo's elephant programme falls short of the model of good management it has presented to the public. It is understandable that, as part of the competitive leisure industry, zoos such as Dublin Zoo need to market themselves simply and effectively. Detail, nuance and accuracy are often unavoidable casualties of this approach. However, it is not acceptable when claims of good practice gloss over poor elephant welfare and, especially, when they promote and falsely justify the persistence of unethical procedures.

Using Dublin Zoo as an example, we challenge the justifications made by zoos for keeping elephants captive. Data provides very little basis for concluding that keeping elephants in zoos has a significant, positive effect on their conservation, whether through education or in any other way.

Our criticisms are aimed at institutions, not the elephants' keepers. We do not necessarily question the commitment of keeping staff to their elephants. For example, the reactions of the current Dublin Zoo's staff to the recent sad deaths of infant elephants appeared genuine and were moving. Neither do we question, on the 13 occasions when Dublin Zoo moved its elephants to other zoos, that keepers lamented their loss, nor that the elephants may have missed their keepers and their fellow elephants. Our concerns go beyond individual relationships and point to broader principles.

The sharp reduction in the number of zoos keeping elephants in the British Isles shows there is little downside to ending the practice, only an opportunity to move forward. Given the clear evidence that elephants suffer unnecessarily in zoos, we are calling on the Irish government to introduce a phase-out of elephants from Dublin Zoo, the only zoo on the island of Ireland that keeps them, after Belfast Zoo moved its two remaining elephants to a zoo in the Netherlands in 2024. The move should start with an immediate prohibition on the breeding of elephants and an immediate prohibition on their import to Ireland. Further, we call for the existing population to be treated in accordance with the ethics underlying this directive. They must be kept humanely in the best possible conditions until they die and must not be exported to inferior conditions or to any situation where either male or female elephants will be used for breeding, whether through natural mating or artificial insemination. We call similarly upon the government of the UK, and on the governments of all other countries, where elephants are held captive with no justification other than the unsubstantiated claims we have noted.

We lay out the verifiable basis for our concerns in section 2. References for statements made in this Introduction and in the Executive Summary are included in the List of References section. Because of our emphasis on Dublin Zoo, we focus mainly on Asian elephants (*Elephas maximus*), which is the only elephant species kept there. Mention is also sometimes made of African savanna elephants (*Loxodonta africana*) or elephants in general. However, we are confident that, despite some species differences, the unsuitability of captivity to provide for elephants' needs applies similarly to all elephant species. Indeed, because wild African savanna elephants have received more study than Asian elephants, the evidence base for the former is even stronger. From what scientists have revealed of African forest elephants (*Loxodonta cyclotis*) we believe that the disparity between what natural habitat and captivity provides is similarly vast, although there are very few forest elephants in the world's zoos.

In southern and SE Asia, where there are about 15,000 captive or semi-captive elephants, we are heartened by the increasing interest in providing elephants with lives worth living. The number of elephants kept in Asia in various kinds of progressive facility greatly outweighs the number in similar conditions in the West (we are also aware that many are kept in very sub-optimal conditions). It is not clear to us whether Asian (and to a lesser extent, African) programmes and expertise have the capacity to help elephants held in Western countries when there is so much to be done for elephants regionally. Hence, for the purpose of this report, we consider only elephants living in the West,^{d, 5} with particular emphasis on European zoos of which Dublin Zoo is an example.

d. Here, we mean western and northern Eurasia, northern America, Latin America and Australasia ()



2. Evidence of problems with zoo management

2.1 Recent deaths from EEHV at Dublin Zoo

The deaths in July 2024 at Dublin Zoo, of Avani (age 8) and Zinda (age 7), from elephant endotheliotropic herpesvirus (EEHV^e) have focussed thinking on the role of zoo management in the epidemiology of the disease. The three other female members of the group also tested positive and were generally unwell.⁶ Dublin Zoo accordingly spent €150,000 on treatment, including importing serum from UK.⁷ Aung Bo, Dublin Zoo's bull elephant transferred to Dublin from Chester Zoo in June 2024, was also closely monitored for EEHV and, so far, has not tested positive.⁸

Regarding research into EEHV treatment and prevention, the director of Dublin Zoo was unable to offer clarity on how keeping elephants at Dublin Zoo could help such efforts, saying only that the zoo was talking to Irish scientists and that *"A number of these conversations, while at an early stage, offer a potential path towards an effective treatment of EEHV."*⁹

e. EEHV is more a disease of Asian than African elephants in captivity, although increasing numbers of cases have been appearing amongst African

Dublin Zoo, along with other Western elephant-keeping zoos, repeatedly makes the point that EEHV affects wild elephants,^{10,11,12} thus raising the prospect that keeping elephants in zoos might help save wild ones. EEHV is indeed lethal in zoos, where it is responsible for over 60% of deaths of young Asian elephants.^{13,14,15}

There is no evidence, however, that this degree of mortality occurs in the wild. Wild Asian elephants may often carry EEHV without getting sick,¹⁶ and asymptomatic infections are reported from free-ranging African savanna elephants in Kruger National Park.¹⁷ The virus appears to be an ancient infection of wild Asian and African elephant populations, with which they co-evolved and which is shed by healthy individuals and maintained in the herds.^{17,18} The impact of EEHV on mortality in wild Asian elephant populations is not fully known but it seems to be very low.^{19,20} In fact, the need to keep captive elephants away from wild ones has been expressed by range state scientists.²¹

The nature of elephant husbandry in traditional zoos such as Dublin may make lethal infection with EEHV more likely. In contrast, natural Asian elephant fission-fusion social dynamics (see section 2.8) have a dual beneficial effect on immunity. Firstly, they increase the likelihood that wild calves receive adequate maternal antibodies. Second, they increase the chance that calves will be exposed to EEHV-shedding elephants at a time when the calves still have high levels of maternal antibodies. In turn, this immunity protects them from the virus.²² Additionally, the extensive nature of elephant ranging and habitat use in the wild tends to avoid the accumulation and concentration of viral spores in any particular locality. None of this applies to the small, unnatural group in its restricted enclosure at Dublin Zoo.

Stress in captivity is another likely reason why a virus that co-evolved with wild Asian elephants and appears to be ubiquitous in the adult population causes so many fatalities in young, captive individuals.²³ Dublin Zoo points out, *“EEHV often lies latent in elephants and can be triggered without warning”*.²⁴ The transfers and introductions of elephants, which zoos including Dublin claim are essential to their breeding operations, could well provide this trigger, moving the infection from latent to the shedding of the EEHV virus.^{25,26} Dublin Zoo had plenty of warning this might happen. A study of a UK elephant group identified that EEHV shedding started from six days to (at least) two months following between and within group moves.²⁷ Stress, a well-known suppressor of the immune response,²⁸ leaves young elephants with low antibody levels. They are then at risk of dying from EEHV.²⁹

The premature deaths of two infants at Dublin Zoo may therefore, one way or another, be a consequence of the zoo's management.³⁰ In November 2023, four members of the group were transferred to Cincinnati Zoo, a social disruption that likely stressed them and the five elephants left behind. In June 2024 a young male elephant, Aung Bo, was transferred to Dublin Zoo from Chester Zoo, presumably to breed. Two weeks later Avani and Zinda had died from EEHV.

Finding a cure for EEHV is no justification for any Western zoo to keep elephants. There are over 13,000 captive elephants in Asia,³¹ dwarfing the few hundred in Western zoos.

Five Asian states have functional molecular laboratories for EEHV diagnosis.³² Asian elephant managers participate in the Asian Elephant EEHV Working Group, which has been in operation since 2015,³³ and there is no shortage of expertise, nor of scientific output, in the range states. One Asian researcher alone, Professor Chatcote Thitaram of Chiang Mai University in Thailand, has authored 64 papers on elephants, of which 23 had “elephant endotheliotropic herpesvirus” in the title. What is clear, however, is that most range states require equipment, training, or essential chemical reagents.^{34,35} If it really wanted to help treat EEHV, Dublin Zoo could fund research and support operations in the range states; it does not need to keep elephants itself.

2.2 Dublin Zoo’s culture of moving elephants

“The Herd”³⁶, a section of a 2022 report on Dublin Zoo, is a sanitised version of what happened at the facility. It plays down the clearing out and shipping in of elephants both before and after the intensification of Dublin’s breeding programme in 2007. Equally sanitised is the 2023 Director’s report of what happened.

“Preparations commenced several years earlier when the decision was made to split the Dublin Zoo herd into its two matriarchal units. The Zoo had bred nine Asian elephants and the behaviours in the herd observed by the keepers signalled the readiness of the original females, Dina and Yasmin, to lead their own families.”³⁷

It reads very much as if (undescribed) “observations by keepers” were used to justify a decision made years before.

Zoos confound their own arguments, arguing simultaneously that they wish to replicate natural social structures and behaviours, yet believing they must maximise breeding potential by shifting animals around. BIAZA appears to be aware of the negative effects on welfare of transferring elephants (e.g. increasing occurrence of stereotypy³⁸) and of their misguided efforts to replicate natural social behaviour (e.g. incorrectly mimicking normal fission-fusion dynamics³⁹), yet it maintains that such transfers are a necessary part of zoo management plans given restricted space and the goals and outcomes of breeding.

Dublin Zoo has been a revolving door for elephants. Thirty elephants have lived there, of which 13 have been relocated to other zoos since 1975 and ten within the last 20 years. The deliberate, permanent splitting of social groups and the frequent transfer of animals between collections is likely to elicit significant distress in Asian elephants, a species famous for its intelligence, strong bonds and emotionality. Severing relationships involving elders may be particularly damaging. Recent research on wild elephants concludes that the disruption caused by the loss of elders from herds may reduce fitness or calf survival.⁴⁰ (As described above in section 2.1, stress can also weaken the immune system.) Dublin has long been an active participant in this kind of elephant trade, most notably since 2005 when Dublin started the process of shifting out elephants to make way for a new breeding group, regardless of the distress caused to those moved and those left behind.

Specific information on the Dublin Zoo elephants is presented below, citing otherwise unattributed data from the Absolut Elefant Elephant Encyclopedia.⁴¹

Aung Bo was born at Emmen Zoo in the Netherlands in 2001 and was first moved at age three. By the time he reached Dublin he was not yet 23 years old and had been moved four times. There is no guarantee he won't be moved again when Dublin decides it wants "fresh blood". As BIAZA points out "*males may transfer throughout their life*".⁴² Confusingly, the Irish Standards for Modern Zoo Practice 9.8.7 states "*It is recommended to avoid repeated or frequent movement of bulls between facilities*"; it should be noted that this is not a stipulation but only a recommendation that Dublin Zoo appears to ignore.

Yasmin was born at Rotterdam Zoo and had lived there for 16 years before being sent to Dublin Zoo. After 17 years, in 2023, Dublin moved her to the Cincinnati Zoo, ranked by In Defence of Animals as the third worst zoo for elephants in North America in 2021, 10th worst in 2022, and 9th worst in 2024.⁴³

Dublin sent Yasmin's son Budi alone to Antwerp Zoo in Belgium when he was less than four and a half. Antwerp exported him to Denver Zoo in the US less than a year later. The zoo sent Anak's son Ashoka and Yasmin's son Kavi, both aged five and a half, to Knowsley Safari Park, which a year later passed them on to the Sydney Zoo in Australia, where they are still the only elephants.

Kirsty was taken from the wild in 1967 and arrived in Glasgow Zoo. Glasgow sent her to Dublin Zoo. Having lived at Dublin for eleven and a half years, Kirsty was transported in 2005 to Neunkirchen Zoo in Germany. This zoo may not have been an EAZA member at the time (or now). It appears unappreciated by the zoo community. Contributors to the ZooChat webpage "*Best Asian elephant facility in Germany*" scored Neunkirchen 0.0% even when it was lumped with others outside the top nine.⁴⁴

Judy was wild born in Thailand in 1957. She ended up at Chester and was passed in 1991 to Dublin, which kept her for 14 years and then sent her with Kirsty to Neunkirchen Zoo.

Upali, a male born at Zurich Zoo in 1994, was passed to Chester Zoo. Upali engaged in social behaviour with a large group at Chester Zoo⁴⁵ and had strong positive relationships particularly with the adult male Chang and the female calf Sithami.⁴⁶ This did not stop Chester from sending him away nor Dublin from taking him. He lived at Dublin for six and a half years, where the zoo had him mating with juvenile females (see section 2.9), before being transferred to Dompierre Le Pal Zoo in France.

Bernhardine ("Dina") has been ping-ponged between European zoos from soon after she was born at Rotterdam Zoo in 1984. She was sent first to Krefeld Zoo in 1985 (aged 1), then back to Rotterdam in 1986 (aged 2). Rotterdam packed her off to Munster Zoo in 1995 (aged 10), then took her back in 1999 (aged 14). In 2006 Dina was shipped to Dublin Zoo (aged 21), where she remains.

Dublin has split apart related and unrelated animals, and this is potentially stressful for both. There is not only abundant anecdotal evidence that unrelated animals can and do bond, for example,⁴⁷ but also published scientific evidence. A UK study which temporarily split two related females from two unrelated females (unrelated to the first pair and each other) noted the same signs of stress and behavioural change as would a highly related group if separated.⁴⁸ Other studies highlight that unrelated elephants can form compatible and successful social groups.^{49,50}

Dublin Zoo itself witnessed the distress it caused by separating elephants. After the male calf Budi was “boxed for transport” to Antwerp Zoo, at age 4 years 4 months,^f the group was recorded in the keepers’ log as reacting:

“There was a lot of vocalisation from the herd especially when they were put back together but all calmed down fairly quickly. Herd seems a little subdued. Yasmin has some minor scrapes on her head and front legs”^g

Yasmin is Budi’s mother. The following day, the group:

“all seem[ed] fine” but “Yasmin still slightly subdued”^h

The next day, a new male, Upali, arrived from Chester and the day after that he was mixed with the female group.ⁱ The following day he chased and appeared to try to mount Yasmin.^j Two days later, Upali broke his tusk on Yasmin’s back.^k

It was surely obvious to Dublin Zoo that for such an emotional species all these disruptions were likely to have had negative effects, in at least most cases and probably profoundly. Research has confirmed that transport of elephants between collections is a stressor of such potency that it increases the rate of mortality by 50% compared to subsequent periods, an effect that may last for at least four years.⁵¹ Asian elephant calves removed from their maternal group before the age of five years have double the mortality risk compared to those that left the group after reaching the age of five years.⁵²

The widely held belief that elephants remember their keepers years after separation has recently been preliminarily scientifically confirmed.⁵³ No-one doubts that the

f. Budi boxed for transport this morning to Antwerp Zoo. Left zoo at 13.00 accompanied by keeper [x]. All went well.” ARKS/ZIMS/Species360_Dublin report, 4th July 2012

g. ARKS/ZIMS/Species360_Dublin report, 4th July 2012

h. ARKS/ZIMS/Species360_Dublin report, 5th July 2012

i. ARKS/ZIMS/Species360_Dublin reports, 6th and 7th July 2012

j. ARKS/ZIMS/Species360_Dublin reports, 8th July 2012

k. ARKS/ZIMS/Species360_Dublin reports, 10th July 2012

relationships between keeper and elephant can be strong and positive,⁵⁴ and it is reasonable to assume that through its frequent involvement in elephant trading, Dublin Zoo has broken bonds between elephants and humans, as well as between elephants.

2.3 Standards of care

2.3.1 “Guided by the natural history of elephants”

“Everything we do is guided by the natural history of elephants, and is grounded in evidence-based research”⁵⁵

Despite claims that the management and state of elephants at Dublin Zoo reflects natural elephant behaviour, comparisons with the results of decades of research on free-ranging elephants demonstrate that it is firmly the antithesis. This research is and always has been available to the Zoological Society of Ireland. The complexity of elephant sociality has been known for 70 years through anecdotal evidence,^{55,56} and that of field scientists for 50 years.^{58,59,60} Furthermore, online reviews very quickly show that knowledge moved long ago from the domain of science and is now widely, publicly available through popular scientific and historical books, children’s textbooks, documentaries and media articles. Indeed, elements of elephants’ special nature “are now so well-known that they have become almost a cliché: their high intelligence, rich emotional lives including a capacity for mourning, [and] caring matriarchal societal structures”.⁶¹

Despite this wealth of knowledge, Dublin Zoo continues to ignore the most basic learnings from natural history. For example, the evidence of research into wild elephants provides no justification for breeding elephants prematurely: rather, evidence indicates a negative effect on lifespan of the targeted females.⁶² Keeping a solitary male, denying mate choice to females, denying fission-fusion sociality, denying a naturally occurring and selected diet; none of these indicates that Dublin’s approach is “grounded in evidence-based research”.

Dublin Zoo has recently been granted certification by Global Humane,⁶³ the international arm of the American Humane Society, a US-based organisation that accredits zoos and other organisations that use animals.⁶⁴ We would be interested to know the extent to which Global Humane checked the elephant program, and if so which of the factors listed in the paragraph above they thought too trivial to affect the outcome of certification. It should be noted that the certification by the Humane Society of some animal facilities, including some dubious zoos and wildlife attractions, has been characterised as an example of “humane-washing”.⁶⁵

2.3.2 Protected contact

“At Dublin Zoo we ... manage [elephants] through a system known as protected contact”⁶⁶

Dublin Zoo should be congratulated for finally leaving behind the barbaric and dangerous practice of coercive free contact and fully transitioning to protected contact in 2007.⁶⁷ In 1992 San Diego became the first zoo to convert, fifteen years before Dublin Zoo.⁶⁸

Both free and protected contact are techniques of elephant management, deployed particularly in the context of training.⁶⁹ It is obvious but worth pointing out, however, that wild elephants do not receive the excessive amount of training that captive elephants do. Logically, training can only be a response to a need for intervention engendered by captivity. And it is not without cost: by reinforcing human control over behaviour, training restricts elephants' autonomy in decision-making and can take them away from highly self-motivated behaviours such as socialising and foraging.⁷⁰ At Dublin Zoo elephants have been separated into individual stalls for training,^l which clearly restricts opportunities to socialise naturally, and obviously can cause distress:

"Females very agitated when attempting to separate for training AM [morning]. Dina reluctant to leave Yasmin"^m

Understandably, elephants in the impoverished environments of zoos can become largely dependent on human-elephant relationships.^{71,72}

2.3.3 "World class care"

"We are committed to providing the elephants at Dublin Zoo with the highest possible standards of care"⁷³

"The elephants at Dublin Zoo receive world-class care"⁷⁴

It is worth knowing just how low the bar of standards of elephant care is set in zoos, which seem more concerned with health issues addressed by veterinary intervention than the broader concepts of living conditions and quality of life. Dublin Zoo is a member of BIAZA and EAZA. Both stipulate a minimum outdoor enclosure size for a group of 0.3ha (less than half the size of a soccer pitch).^{75,76} BIAZA had no published husbandry guidelines until 2002, the year after it became aware that the RSPCA was conducting a review of zoo elephant welfare.^{77 n}

l. "Carried out short training session with elephants – first time since the birth of the calf that all elephants were separated into individual stalls". ARKS/ZIMS/Species360_Dublin report, 5th March 2008

m. ARKS/ZIMS/Species360_Dublin report, 22nd March 2014

n. EAZA published the first of the editions of its own guidelines after BIAZA did, drawing heavily on the BIAZA guidelines.

“Dublin Zoo also receives regular expert advice from specialist elephant care consultants”⁷⁸

It is concerning that, however expert in their own fields of intensive animal husbandry, these consultants' experience may be limited to elephant biology and behaviour in unnatural captive situations and defined by a commitment to the captive elephant industry. Field-based scientists, whose concept of well-being and appropriate environment is drawn from decades of experience studying wild elephants, have a very different perspective on elephants' basic needs. See for example the views expressed by ElephantVoices⁷⁹ the statement signed in October 2015 by 80 scientists, conservationists, elephant care, animal welfare and policy experts and former zoo directors,⁸⁰ and a research paper on the need for captive elephants to have abundant natural space, endorsed by 25 leading elephant specialists.⁸¹ See also the Elephant Charter, signed by 80 elephant biologists and 200 elephant professionals⁸² (see section 2.7).

2.3.4 Irish Standards for Modern Zoo Practice: section on elephants.

The gap between what elephants evolved to do and what they can do in zoos is vastly greater than can be bridged even by effective implementation of the Irish Standards for Modern Zoo Practice (2016).⁸³ The ISMZP represent a positive attempt to raise welfare practice but fail to tackle the largest problems: the lack of quality space; the inability of elephants to forage naturally on natural foods; the impossibility of providing for species-typical socio-dynamics including fission-fusion of groupings; and the long and complex development of males' social behaviour. Climate is another likely obstacle on reaching acceptable standards of welfare.

Reviewing the ISMZP with respect to Dublin Zoo:

9.8.1 “collections are recommended that they should plan for space and facilities for at least 30 years”

It's sad to think that elephants will be confined to less than a hectare in Dublin's cold climate for at least thirty years.

9.8.5 “The absolute minimum must be two cows”

Most of sections 9.8.5 (females) and 9.8.6 (males) are transparently attempts to justify management schemes that are nevertheless completely at odds with elephants' biology. The “two cow” minimum, for such famously sociable species,⁸⁴ is a case in point.

9.8.6 “It is recommended that bulls are... housed so they can mix regularly with family herd, ideally with another bull present”

Dublin Zoo, Ireland's only elephant facility, drops below the “ideal”.

9.8.7 "It is recommended to avoid repeated or frequent movement of bulls between facilities"

9.8.8 "It is recommended to avoid repeated or frequent movement of cows between facilities"

The management of elephants prescribed by the EEP demands movement of animals between collections (see section 2.9). As detailed in section 2.2, transport of elephants to and from Dublin has occurred repeatedly. Of the 13 elephants Dublin has transferred to other zoos, ten occurred after transfers were first identified as a major cause of increased mortality in 2002.⁸⁵ Of these, eight occurred after that finding was confirmed in the peer-reviewed scientific literature in 2008.⁸⁶

9.8.9 "It is recommended that each bull should stay in the maternal herd until puberty, as this is the age at which they would naturally leave"

This section is another one written to facilitate practice with little basis in natural elephant behaviour. The sentence quoted is an obvious example. Puberty is reached years later in the wild than in zoos, and males leave their natal herds years later.⁸⁷ Zoos produce males they know are likely to be sexually precocious and then must get rid of them when they are still infants, even though enhanced mortality is a proven risk.⁸⁸

9.8.15 "Outdoor enclosures must be as large as possible"; "The minimum shared enclosure size should be 6,000m²"

The size of the females' enclosure at Dublin is estimated to be 0.6ha, which the ISMZP states is enough for eight adult females. The metric *"as large as possible"* does not draw as its reference the needs of elephants. An enclosure of 0.6ha is less than the size of a soccer pitch. This standard misses by a long way the minimum of 20,000m² (2ha) proposed by Defra in its consultation on the UK Secretary of State's Standards of Modern Zoo Practice for Great Britain (SSSMZP),⁸⁹ which in any case is still far too small.

9.8.17 "Outside substrates must be primarily natural; soil or grass is recommended"

There appears to be little or no growing vegetation in Dublin's outdoor exhibit.⁹⁰

9.8.24 "Food should be varied in its presentation, and food should encourage a full range of natural foraging behaviour"

There is little or no growing vegetation in the <1ha enclosure at Dublin Zoo, and both the variety of foodstuffs and the ways they are offered are very low compared to the opportunities wild elephants are presented with. It is therefore probably impossible to stimulate *"a full range of natural foraging behaviour"* (see section 2.10).

9.8.33 "Risk assessments must include all management procedures used e.g. free and protected contact"

This shows that, even though Dublin Zoo is the only elephant keeping zoo in Ireland, only has five elephants and only uses protected contact, the government does not want to preclude the return of the barbaric and dated "free contact" style of management, which is based on learning through fear and pain.

9.8.42 "Correct use of the ankus will not injure, hurt or break the skin or cause any other kind of physical or mental injury"; "Where negative reinforcement is used it must never compromise the welfare of the animal"; "The handle of the ankus must never be used to hit an elephant"

The ankus (elephant hook) is the main tool of free contact and designed solely for negative reinforcement. The purpose of negative reinforcement is to "compromise the welfare of the animals", albeit the intention may often be to do this very slightly and briefly. Further, it is widely accepted amongst elephant trainers that the ankus is meant to have a significant effect⁹¹ otherwise it would not need to be heavy with a hook of sharp metal. Alan Roocroft, one of the world's most experienced elephant trainers in both free and protected contact, was instrumental in revamping Dublin Zoo's elephant facility.^{92,93} Roocroft makes it clear that the ankus is used to get a response through pain, and that "Keepers and elephant trainers generally avoid discussing the hook and how it is used."⁹⁴ The ISMZP appears equally evasive.

9.8.45 "Electric goads must only ever be used to protect human safety in extreme situations (e.g. when there is an imminent threat to life)"

It is not clear whether Dublin Zoo uses electric goads. Electric goads (cattle prods/ hotshots) are standard tools of free contact. As such, they should have been phased out at Dublin when it fully converted to protected contact in 2007. Worryingly, the ISMZP suggest their use is still permitted. For a hotshot⁹ to have a reasonable chance of stopping an attack, it seems logical to assume that elephants must have had prior exposure to them in training, so they come to fear them, i.e. before there is an imminent threat to life. The ISMZP do not explain how an elephant can learn to fear the electric goad.

2.4 Lifespan

"There is not enough collected data on wild Asian elephants to estimate their lifespan. However, it has been suggested that Asian elephants can live between 40-70 years in the wild and up to 80 years in zoos."⁹⁵

o. Elephant trainers generally use small, hand-sized cattle prods, not the long-handled versions

There is no recent data on the longevity of wild Asian elephants (what data there is refers to a 1992 study of a population in intense conflict with humans⁹⁶) but there is for semi-wild logging elephants in Myanmar.^{p 97}

In 2008, a study published in *Science*⁹⁸ showed that a female^q Asian elephant born into a European zoo would be expected to live half as long as one born in a logging camp in Myanmar. The same applied to African elephants born in European zoos compared with elephants born in Amboseli National Park in Kenya, even when human-induced deaths were taken into consideration. Wild-born female Asian elephants entering European zoos at a median estimated age of just 3.4 years, even after the trauma of separation and transport (itself a cause of raised mortality⁹⁹), showed significantly better survivorship as adults than zoo-born Asians.

The latest analysis of UK elephant infant survivorship (2021) confirmed that there has been no improvement in the survivorship of zoo-born elephants. Age at death remains at a median of 17 years approximately.¹⁰⁰

The most recent analysis of zoo elephant survivorship (2023), this time of elephants in European and North American zoos, confirmed that the negative effect endowed by zoo birth persists: survivorship of zoo-born elephants up to the age of ten years did not significantly change over the 65 years from 1960 to 2019.

Apart from the seemingly innate persistence of high early life mortality, overall elephants do appear to be living longer in zoos, but still not as long as protected populations of wild or semi-wild elephants.^r This is probably due to the recent reduction in practices that should have long been known to severely compromise survival. Such developments include improvements in substrate, reduction in chaining and a reduction in coercive management methods.¹⁰¹ Elephants in European zoos are still obese and, while nowadays their diets are managed to reduce obesity, many still appear significantly overweight when compared to wild elephants.¹⁰² These changes, however, were always obvious low-hanging fruit: they have not affected the fundamental effect zoos have on elephants born in them.

Visual inspection of photographs of the elephants currently held at Dublin Zoo (K. Lindsay, pers. obs.) indicate that they all present as obese. Their hips, shoulders and

p. Although these elephants are semi-captive and used in the timber industry subject to set workloads, they forage unsupervised in forests during nights and official rest periods and breed with captive and wild elephants. See Lahdenperä *et al*, 2014.

q. There weren't enough males to conduct the equivalent analysis.

r. Scherer *et al* (2023) compared Western zoo elephant populations, which have secure food, veterinarians, fences, and security guards, with wild populations subject to considerable human-induced mortality, and claimed equality in elephant longevity.

backs show no sign of the bones beneath, just rounded lumps. Their necks are thick, with rolls of fat when tipping their head up, and there is also a line of fat under their bellies. Such body condition is rarely seen in wild elephants, apart from briefly and temporarily during the height of a good wet season. It is clear that the Dublin Zoo elephants are carrying this extra weight around on their leg joints and feet at all times, which poses a serious risk to the health and welfare of the animals.

We do not know for sure whether the nine elephants born at Dublin Zoo, all since 2007, fit the same picture, because seven were born only in the last ten years. Two of the nine elephants born at Dublin Zoo are already dead.

2.5 Size of enclosure

“The complex outdoor habitat” is “where the elephants at Dublin Zoo spend most of their day, so it is important that this environment is enriching for them”¹⁰³

“a vast habitat is presented with a family herd of elephants playing in pools or mud wallows... which replicates encountering these incredible animals as you would in the wild”¹⁰⁴

Dublin Zoo refers to its elephant enclosure, the Kaziranga Trail,^s as “a vast habitat”, although it covers less than a hectare^t¹⁰⁵ and not all is always available to all elephants at any one time.^u The Dublin Zoo facility is about the UK median¹⁰⁶ but half the size of the minimum proposed in the SSSMZP 2022 consultation.¹⁰⁷ It is 1/8th the size of the largest elephant facilities in British zoos,^v 1/20th the size of the largest elephant facility in Europe,^w and less than one percent of the size of elephant sanctuaries in North and South America.^x Natural home ranges of wild Asian elephants in India and Sri Lanka range from 34 to 650 km².^{108,109,110,111} Kaziranga National Park in north-eastern India, for which the exhibit is named (somewhat ironically) covers 43,000ha. The home ranges of African savanna elephants are rarely as small as 10km², more usually hundreds and can be multiples of 1,000km².¹¹²

Size for size, Dublin’s elephant exhibit is equivalent to a group of adult humans spending their entire lives in an area the size of a singles tennis court. An Asian

s. Officially opened on 28th June 2007

t. The total indoor and outdoor area = 0.927 hectares, calculated from Brady *et al* (2021)

u. Dublin Zoo sometimes separates male and female (p. 9, <https://www.dublinzoo.ie/wp-content/uploads/2022/11/Elephants-at-Dublin-Zoo-Conservation-Research-and-Management.pdf>). When this happens, females lose 25% of the exhibit total, and the bull 75%.

v. Whipsnade Zoo in Bedfordshire, and Noah’s Ark Zoo in Somerset. The next largest is Howletts in Kent, at just over 3ha.

w. Cabarceno Natural Park (a zoo), Cantabria, Spain

x. For example, The Elephant Sanctuary in Tennessee, and Global Sanctuary for Elephants, Brazil

elephant's most energy-efficient walking speed is about 1.4 metres per second,¹¹³ so an elephant at Dublin Zoo could walk across the enclosure in little over a minute and cover every square metre in little more than an hour.^y The lush plants shown in publicity material¹¹⁴ are grown for display, and only incidentally allow elephants at most very restricted access. If they are desperate, some elephants can sometimes reach some of the display vegetation:

"Asha is lying on her side and reaching her trunk under the fence between gate 9 and the blackbuck to browse on the bamboo"^z

There is little comparison with the environment where wild elephants live. For example, the real Kaziranga is:

"a vast expanse of tall elephant grass, marshland, and dense tropical moist broadleaf forests, criss-crossed by four major rivers, including the Brahmaputra, and the park includes numerous small bodies of water."¹¹⁵

Instead of five, nearly 2,000 Asian elephants live there.¹¹⁶

Along with an unsuitable climate, a lack of space may be a key factor underlying the poor welfare experienced by elephants in zoos.¹¹⁷ Zoos may well know this but there is little that many of them can do about it, hemmed in as they are by their (often urban) locations, planning restrictions and a lack of funds. In attempted defence, they argue that it's not the quantity but the quality of space that matters.^{aa,bb} In fact, elephants require both extensive space and good quality habitat.

The argument for space at its most basic is that if one hectare allows for, for example, ten features (ponds, sand hills, rubbing posts, screening, etc.), then N hectares allow for $N \times 10$ features at the same density, increasing choice and variety by N times. In addition, more space allows for longer journeys and decreases the time before elephants cover the same ground. Elephants can now stand further apart if they want to avoid each other. At higher levels of N , sustainable grazing becomes more likely, allowing elephants to forage more naturally.¹¹⁸ Only if captive space is at the same order of magnitude as a natural home range can it provide for

y. Elephant head-body length estimated at 3.5m, 1.5m wide = 5.25 square metres. It would take $3.5/1.4 = 2.5$ seconds to cover its body length. There are 1,766 elephant "footprints" in the entire enclosure of 9,270 square metres. $2.5 \times 1,766 = 4,415$ seconds = 74 minutes

z. ARKS/ZIMS/Species360_Dublin report, 26th June 2009

aa. EAZA (2020) p. 29: *"the size of an exhibit plays a secondary role in supporting optimal welfare of zoo elephants"*

bb. Zoos Forum (2010) p. 13: *"Provided that it, at least, exceeds minimum requirements (also a very difficult concept which we do not attempt to define here), other aspects of the quality of the environment may be more important than space per se"*

the expression of the natural, species-typical, lifetime socio-dynamics of male and female elephants.

Studies have identified a positive correlation between enclosure size and improved foot health,^{119,120} reduced stereotypy,^{121,122,123} more exploration and behavioural diversity,¹²⁴ night-time recumbency,¹²⁵ and improved gait.¹²⁶ A 2016 study of 68 US elephant-keeping zoos concluded that space alone was not a risk factor for stereotypic behaviour, obesity, or female reproductive dysfunction,¹²⁷ but the range of enclosure sizes in the study sample was limited.

Caution should be exercised when trying to draw conclusions from all these studies. As well as dealing with small sample sizes, all of them were focused on identifying differences in welfare effects between enclosures of different sizes when these enclosures may have presented little of quantifiable difference from the elephants' perspective. For example, in the 2016 US study, the space available to elephants ranged from 0.01 to only 1.6ha, with a mean of 0.28ha.¹²⁸

Even a small home range for a wild Asian elephant is in the region of 34km² (3,400ha)¹²⁹ and for most elephants, they are usually many times bigger than this. Elephants operate on this scale, their home ranges varying over the year depending on season and other variables. It is therefore not surprising if elephants in zoos do not differentiate their responses to enclosures with areas so much smaller than even the smallest natural home range.

Dublin Zoo repeats the rationalisation common in zoos that if animals have all the resources they need, they do not need lots of space.¹³⁰ This view is increasingly challenged. Welfare problems in carnivores in zoos have been shown to be strongly correlated with home ranges and minimum daily distance travelled in the wild, suggesting some species have a hard-wired need to cover minimum areas and distances (wild polar bears travel furthest and captive ones rank worst for welfare).¹³¹ A 2020 study found that for Asian elephants, walking ranks highly amongst field scientist and zoo experts as a strongly motivated behaviour, and proposed that systems where Asian elephants must forage for their own food will provide for many of the most strongly motivated behaviours (walking, grazing, browsing, foraging).¹³² It follows that only large enclosures, diverse over space and time, will provide the challenges necessary to good welfare.

2.6 Climate

■ *"The new exhibit "provides 24-hour access to outdoor areas" ¹³³*

This improvement is welcome, if late in the day (BIAZA called for such access in the first edition of its Guidelines in 2002). But in practice, Dublin's low temperatures have denied 24-hour access to outdoor areas, as illustrated by the keepers' log:

■ *“Cows and calves locked into cow house due to low temperatures”^{cc}*

On 2nd March 2016 (the date this log record refers to), it might have been cold, but it was not very cold. March 2016 had an average temperature of 6°C, a low of -3 °C and a high of 13 °C. The previous month had been colder, with equivalent figures of 5 °C, -5 °C and 12 °C.¹³⁴ It may be likely that elephants were (and are) locked in frequently over the winter months.

Asian elephants are animals of the tropics and subtropics, and at Dublin Zoo are kept in a climate in which they did not evolve. To illustrate, the original Kaziranga in Assam is classified under the Köppen system as humid sub-tropical, with an average yearly temperature of 23.7°C. Its lowest temperatures are in January, with an average of 17.5 °C. In stark contrast, Dublin’s average yearly temperature, at 9.4°C, is 14.3°C lower than Kaziranga’s. Dublin’s average January temperature, 4.7°C, is 12.8°C lower than Kaziranga’s.¹³⁵ Even Kaziranga’s lowest average monthly temperature is just 0.7°C lower than Dublin’s highest.

Cold weather is the “elephant in the room” for zoos keeping elephants in temperate and cold climates. The challenge it presents is obviously large and this may be the reason Dublin and other zoos rarely research or mention it, but scientific evidence suggests cold has a negative effect on elephant welfare. Lengthy times spent indoors, and overall low temperatures increase the chances of stereotypic behaviour in elephants.^{136,137,138} Restricted access to natural day-night cycles may influence reproductive acyclicity.¹³⁹ Elephants in Myanmar logging camps experience higher mortality as the average daily temperature deviates from 24°C¹⁴⁰; the average temperature in Dublin is 9.4°C.¹⁴¹

Climate may be one of the factors that underlies poor welfare of elephants in the UK and Ireland, expressed in premature deaths of zoo-born elephants and high infant mortality (see section 2.4). It may be that the challenge of maintaining homeostasis in the UK’s climate puts a strain on elephants by negatively affecting functions such as circulation, digestion, and the immune response.^{142,143,144} Stress indicators were found in higher concentrations in the faeces of Asian and African elephants held in North American zoos at more northern latitudes.¹⁴⁵ Indeed, scientists working with Myanmar¹⁴⁶ and zoo¹⁴⁷ elephants have cited sub-optimal climate as a possible cause of high mortality in zoo elephants.

2.6.1 Global heating

Keeping elephants in cold climates has repercussions for more than just the well-being of the elephants. Wild elephants are so influential in nature they are called “ecosystem

cc ARKS/ZIMS/Species360_Dublin report, 2nd March 2016

engineers”^{148,149} and have a major ecological role in carbon capture.¹⁵⁰ In comparison, Dublin Zoo’s elephants’ lives are almost certainly harmful to the environment. They are large, sparsely haired, tropical and sub-tropical animals which consume huge amounts of food, sequester little carbon as they cannot play their natural ecological roles, and release the greenhouse gas methane.¹⁵¹ Their barns in cold climates require a lot of artificial heating. In contrast, wild Asian elephants need no such heating, and capture carbon through their roles in seed dispersal of large trees and structuring of vegetation communities towards productive, fast-growing plants. Additionally, their dung incorporates considerable plant material into the crucially important soil carbon bank.¹⁵²

2.7 Sentience

“Elephants are known for their excellent memory and their intelligence. Matriarchs will remember ancient seasonal migration routes and watering holes. This knowledge is passed down from generation to generation and each matriarch will lead the herd through these routes every year.”¹⁵³

It is difficult to see how Dublin Zoo provides any outlet for the highly developed intelligence and memory of elephants. In wild elephants knowledge is accumulated over a lifetime and passed on through social learning, with older animals clearly identified as repositories for such wisdom.^{154,155} The loss of such individuals can have severe consequences for the herds such as reduced calf survival and inappropriate responses to predators, as well as overall reduced herd fitness and cohesion.¹⁵⁶ In contrast, it is difficult to understand what the role of culturally inherited knowledge could possibly be for elephants in captive facilities such as Dublin Zoo: there is almost nothing worth learning, remembering or passing on. That said, we believe that bonds between elephants are so strong that their severing through zoo management processes causes as much stress as the loss of knowledgeable individuals in the wild.

Elephants have developed a complex language that incorporates vocalising, seismic vibrations, touching, visual displays and scent. African elephants have been shown to recognise the calls of a hundred individuals from 14 different families,¹⁵⁷ at distances of several kilometres. Seismic communication can carry signals on an even greater scale.¹⁵⁸ Recent research shows they even personalize calls to individuals, and, in turn, the targeted recipient knows who the call comes from.¹⁵⁹ African elephants are better studied than Asian elephants and it is possible, indeed likely, that the latter shares this ability. Elephants in a zoo have little or no opportunity to use these rich communication modalities; it is as if they are confined in a sensory deprivation chamber.

Individual adult Asian elephants are aware of and altruistically respond to the emotional or physical distress of other individuals,¹⁶⁰ evidenced by attempts to “rescue” females sedated for radio-collaring,¹⁶¹ and the rescuing and guarding of calves.¹⁶² African savanna elephants have removed foreign objects from the bodies of their associates: a tranquilizer dart, a spear, and a plastic bag from an offspring’s mouth.¹⁶³

That Asian^{164,165} and African¹⁶⁶ elephants have personalities has been scientifically established, but it is behaviour such as mourning that has brought elephants into consideration for special status amongst animals. Engagement with death in African elephants has long been known and cited as evidence for advanced cognition, and a recent study confirmed it in Asian elephants. Wild Asian elephants buried their dead calves in ditches and vocalized loudly for 30 to 40 minutes before leaving, actions researchers associated with grief and mourning.¹⁶⁷ This observation corroborates the findings of an earlier study which found that Asian elephants carried the bodies of dead calves, stood guard over the bodies of dead herd members, made noises and appeared to comfort each other.¹⁶⁸

Regrettably, Dublin Zoo has given elephants plenty of opportunity to mourn the loss of companions through deaths and transfer to other zoos, but this should not be seen as a positive feature of the captive environment.

Asian and African elephants are:

“unusually intelligent and perceptive; they exhibit the advanced traits of empathy, self-awareness and complex emotions, expressing an interest in their own lives and the lives of those to whom they are attached. The cognitive capacities of elephants deserve respect and special moral consideration in all of our interactions with them as individuals.”¹⁶⁹

Philosophers have argued for personhood or borderline personhood status for elephants.¹⁷⁰ The case to recognize the special status of elephants has gone to court twice. Both times judges indicated their regard for elephants but rejected the claims on the basis that, as non-humans, elephants had no legal standing to challenge their own detention.^{171,172} Nonetheless, the focus on elephants' legal status will likely grow,¹⁷³ as it has for other entities. Richard Dawkins and Jane Goodall were amongst those arguing that the “moral community” of humans be extended to include the other great apes,¹⁷⁴ and in 2007 the parliament of the Balearic Islands, granted legal personhood rights to all great apes.

“The Elephant Charter”¹⁷⁵ was written by eminent elephant field biologists representing the longest studied populations of African savanna, Asian and African forest elephants. It includes in its preamble:

“We, the undersigned scientists and conservationists, affirm that elephants are unique, important and irreplaceable. We, therefore, hereby introduce an Elephant Charter to promote the protection of all elephants from human conduct and institutions that cause their needless suffering or loss of life”¹⁷⁶

The Elephant Charter has since September 2013 been signed by 80 elephant biologists and 200 elephant professionals. It is noticeable how few zoo professionals have signed the Charter, and those who have are often known for being concerned about the ethics of keeping elephants in zoos.



Even if Dublin Zoo will not recognize the special status of elephants, it must surely face up to its own obligations to fully recognise and cater for their species' needs. By ignoring biology so obviously, it appears that Dublin Zoo does not take this responsibility seriously.

Nowhere is this illustrated more clearly than in the deeply sad spectacle of Dina, Dublin Zoo's oldest elephant, swaying repetitively in her barn.¹⁷⁷ We have not found reference to stereotypy in Dublin Zoo's communications, but we believe Dina's behaviour is stereotypy, also known as "zoochosis"¹⁷⁸ because of its prevalence in zoos.

2.8 Elephant society

*"The aim of this new habitat was to provide a breeding herd of Asian elephants with the space they needed to live in a natural social group setting, as they would in the wild, while also encouraging them to display natural behaviours"*¹⁷⁹

In reality, the so-called "natural social group setting" is equivalent to a small group of wild elephants which, unnaturally, never gets to consort with its relatives and other companions. Wild Asian elephant females demonstrate "fission-fusion" sociality, where elephants maintain years-long associations with a complex and dynamic system of relatives which join, separate and rejoin.^{180,181,182,183} In contrast, as BIAZA acknowledges "[the] fission-fusion dynamic is difficult to recreate in zoos as once a transfer has been made it is final".

When Dublin sends females away it does not draw on the lessons of wild Asian elephant behaviour as it claims. On the contrary, genetic and behavioural evidence points strongly to the likelihood that females remain in consistent groups of kin and established non-kin companions^{185,186} Wild female elephants observe competing males and make clear choices with whom to mate,¹⁸⁷ a part of elephant life forever denied to Dublin Zoo's elephants.

Dublin Zoo also ignores natural elephant behaviour in managing males:

*"In the wild, bull elephants move between different herds... so Upali's move is in keeping with what happens naturally."*¹⁸⁸

*"Young males leave the group when they are 6-7 years old. Bulls sometimes form bachelor groups (groups of males) but are mostly solitary (live alone), and only visit the female herds to mate."*¹⁸⁹

These statements demonstrate a poor knowledge of male Asian elephant behaviour. Pubertal male elephants disperse from their natal groups when 10-15 years^{190,191} and form bachelor groups as they progress through young adulthood.¹⁹² Older males¹⁹³ of ≈30 years old are regularly sighted with male conspecifics, possibly serving a leadership role for younger males and with female groups for mating or simply for socialising.

In some ways male Asian elephant society is even more complex than that of females, because it changes with age and the influence of musth. Males develop psychologically through a complex and changing sociality from birth to old age of friendships and associations with both males and females.^{194,195,196,197,198}

This is natural dynamic male elephant society, nothing like that experienced by, or possible for, the solitary male Aung Bo at Dublin. Unlike wild male elephants, the male at Dublin Zoo can never spend time with other males, other than perhaps juveniles.

Five males have been born at Dublin Zoo, of which only one is older than 11 years. One ominous outcome of breeding in zoos is the effect on zoo-born males' sexual development. In the wild, Asian elephant females choose mates based on an assessment of characteristics such as body size,¹⁹⁹ competitiveness,^{200,201} and, most importantly, musth status.^{202,203} This matters much less at Dublin Zoo, where females can only mate with the male who has been chosen by the managers to accompany them, but, arguably, any male offspring resulting from such matings would stand little chance of success in the wild.

Disturbingly, captivity dramatically changes the process of musth. Far from being sexually rampant and dominant competitors, musth elephants in zoos have poor quality semen (<5% motility) and a low libido.²⁰⁴ This condition differs so much in its characteristics from musth in wild males that it has been given a new name by

zoo-affiliated researchers – “breeding excitement”, which describes the temporary mild, musth-like symptoms demonstrated by zoo bulls in the presence of cows in oestrus. Maximum time span for “breeding excitement”, when both semen quality and libido are higher, is only five days. Temporal-gland secretions and urine dribbling are reduced in “breeding excitement” compared to the real musth of wild bulls. The latter lasts one to five months (and has been ludicrously termed by zoo-affiliated researchers “classical musth”).²⁰⁵

2.9 Breeding elephants at Dublin Zoo

“Dublin Zoo is home to a successful breeding herd of Asian elephants, and actively participates in the EAZA Asian elephant Ex Situ Programme (EEP).”²⁰⁶

Over the five years 2013–2017, even the entire membership of the EAZA Asian elephant EEP of some 307 elephants, was producing only ≈15 calves per year.²⁰⁷ In 2019, only about half of reproductive aged females showed normal hormonal cycles, and only between 4-17% of females could choose to access a breeding male over the 24 hours when she was in oestrus.²⁰⁸

Nevertheless, in some zoos, including Dublin, breeding has occurred frequently enough that the population outgrows the small space available.²⁰⁹ Hence the splitting and sending away of elephants witnessed at Dublin Zoo.

Extreme measures are part of EAZA’s Asian elephant ex situ programme (EEP) to which Dublin Zoo along with other elephant-keeping European zoos have signed up.²¹⁰ They include:

1. “As part of the EAZA Ex situ Programme (EEP) structure, there are various population management tools available [that include] applying a breed and cull strategy”.²¹¹
2. The programme produces juvenile but sexually mature males: “Asian elephant bulls are capable to sire offspring in a zoo setting when they are just 6 to 7 years old.”²¹² This may be why Dublin was so keen to be rid of its juvenile males even though it placed their welfare at risk. For Asian elephants, calves removed from their maternal group before age five years doubled the mortality risk compared to those that left after five years.²¹³ Dublin is evidently prepared to take this risk (see section 2.2).
3. Despite its many commitments to build natural, layered female groups, EAZA knows it is impossible to do this indefinitely. Hence “sub-groups of the matriline may be required to move to new facilities e.g. grandmother, mother, aunt and daughter”.²¹⁴ With the small spaces that zoos like Dublin provide, the artificial fracturing of female families will happen much sooner than a natural separation of wild females. This has already happened at Dublin Zoo²¹⁵ and will happen again if the group reaches a critical size.

4. Implications of the EEP's approach to management of males include keeping some bulls in bachelor groups and moving them to and from female groups.²¹⁶ After the age of four or five, males will not grow up with females as they would in the wild and will not be able to maintain contact with the natal group as happens in the wild. Unlike in the wild, females will have no mate choice.²¹⁷
5. EAZA is aware of the danger posed by the precocious sexual development that its zoos have induced in zoo-born females. To prevent inbreeding, zoos such as Dublin that are keeping the bull with the female group on a regular schedule *"must be prepared to either separate or exchange him. Asian elephant males must be switched before daughters reach an age of 4 years."*²¹⁸

The disruption caused by zoos to the sexual development of both male and female elephants results in a population whose breeding, sexuality and sociality bears no relation to that of wild elephants.

Each one of the points 1 – 5, above signals at best an ignorance and at worst a blind indifference to elephants' biology and well-being. We will focus on one proposal from the studbook keeper of the Asian Elephant EEP:

■ *"female elephants should be mated for the first time at 8 years of age"*²¹⁹

Very premature sexual maturity in both males and females is a well-known phenomenon in Western zoos.^{220,221} There is a clear danger that the EEP regards capitalizing on this premature reproductive onset as crucial to sustainable populations of Asian elephants²²² because in zoos reproductive senescence sets in among females in their twenties,²²³ in stark contrast to wild and semi-captive females where it is reached at over 50 years.²²⁴ EAZA believes there is nothing wrong with premature puberty. Instead, it thinks it reflects good husbandry:

■ *"Due to good nutritional state in captivity" "The age of puberty is lowered by good housing conditions with constantly available food of sufficient quality".*²²⁵

EAZA confuses high nutrient levels (hay, vegetables, pellets) with appropriateness. The food elephants evolved to eat is very high in fibre and low in nutrient content, but of very diverse species composition, and zoo elephants' bland diets can affect their gut health.²²⁶

A group of scientists and zoo professionals reporting to the UK government in 2021, was far less convinced than EAZA of the benefits of high nutrient food, fast growth rates and premature breeding. They expressed concern that the effects of short intervals between births, precocial puberty and breeding, and high juvenile growth rates were poorly understood. They raised the potential of these effects to impact

negatively on survival and welfare and noted that early first reproduction has already been associated with higher calf death and possible shortening of maternal fertility.²²⁷

They were right to be concerned. Premature breeding may artificially accelerate reproductive senescence in both the dam²²⁸ and the offspring.²²⁹ Of semi-wild females in Myanmar timber camps who did not reproduce by age 19, 16.4% died between the ages of 19 and 50. Of the females who produced at least one calf before age 19, 26.6% died before they were 50.²³⁰

Dublin Zoo is part of the EEP's unethical programme. Anak conceived before she was ten, Yasmin before she was 11.^{ee} But Dublin Zoo decided to allow mating access to Asha, not from the EEP studbook keeper's proposed minimum age of eight years, but from age five.

2.9.1 The example of Asha

Asha was born at Dublin Zoo on 25th May 2007.

Less than four years later, a senior endocrinology technician at Chester Zoo, commenting on analysis of a sample from Asha, reported:

■ *"Asha does appear to be cycling"*^{ff}

On this date, Asha was aged 3 years 11 months, many years before a wild or semi-wild Asian elephant would be able to conceive. Asha's premature sexual maturity is close to the earliest recorded (three and a half years).²³¹ (An elephant under the age of five is usually referred to as a baby,²³² calf, juvenile,²³³ or infant.^{234,235})

Upali, a young male, was brought in from Chester Zoo on 6th July 2012.^{gg} He was allowed access to Asha within days. On 19th December 2012, Upali mounted the 5 years 6 months Asha but did not penetrate her.^{hh} Upali's sexual interest in Asha continued for the next two years, and he first mated fully with her in February 2014, when she was aged 6 years 8 monthsⁱⁱ.

At an estimated date of 3rd December 2014 (gestation is ≈656 days^{236,237}), when she was aged 7 years 6 months, Asha became pregnant. She entered the early stages of labour in the early morning of 19th September 2016 and a female calf, Zinda, was born at 6.20pm.^{jj} Asha became a mother at the age of 9 years 3 months. In contrast,

gg. ARKS/ZIMS/Species360_Dublin report, 6th July 2012 were separated into individual stalls".

hh. ARKS/ZIMS/Species360_Dublin report, 19th December 2012

ii. ARKS/ZIMS/Species360_Dublin report, 2nd February 2014

jj. ARKS/ZIMS/Species360_Dublin report, 19th September 2016

amongst the semi-wild Asian elephants of the Myanmar Timber Enterprise, the mean age of mothers at first birth is 19.9 years,²³⁸ and in the wild elephants of Uda Walawe National Park, Sri Lanka, it is 13.4 years.²³⁹ Asha's calf Zinda died aged 7 years 9 months. Had she been born in a Myanmar timber camp the expectation of her median lifespan would have been 42 years.²⁴⁰

Immediately following Zinda's birth, Asha entered a difficult period:

"Asha given oxytocin x 2 darts a.m. and p.m. Appears swollen around vulva/rear. Vet [x] checked and advised it may be possible edema/swelling. Calf making strong attempts to suckle – Asha moving quite a bit making latching on difficult"^{kk}

"Asha has continued to throw sand on genital region & appears to be less full of milk. Began medication for pain relief, to stimulate milk production & given antibiotics also. Received equipalazone (5g a.m. & 2.5g p.m.), mortilium (500g), but would not take noroprim."^{ll}

Asha's swelling got worse, and treatment continued until at least into October. There were signs of blood and mucus in her urine until 19th October.ⁿⁿ

By 25th October 2016, just over a month after she had given birth and when she had hardly recovered from illness, Dublin Zoo was allowing Upali to mate with her: "Upali attempted to mate Asha"^{oo}

Upali fathered three more calves after Zinda's birth before he was sent away to another zoo. He had shown interest in mating with Asha and lived alongside her for another 2 years 4 months. Yet she did not fall pregnant again. This raises the legitimate question of whether her premature pregnancy followed by an infection rendered her unable or unwilling to conceive or mate.

2.10 Feeding and ranging behaviour

*"Most importantly, the Kaziranga Forest Trail gives our visitors the opportunity to watch elephants displaying a wide variety of natural behaviours – bathing, feeding, moving, digging, playing, interacting or simply relaxing together as a herd, as they would in the wild."*²⁴¹

kk. ARKS/ZIMS/Species360_Dublin report, 21st September 2016

ll. ARKS/ZIMS/Species360_Dublin report, 23rd September 2016

mm. ARKS/ZIMS/Species360_Dublin report, 4th October 2016

nn. ARKS/ZIMS/Species360_Dublin report, 19th October 2016

oo. ARKS/ZIMS/Species360_Dublin report, 25th October 2016

It is beyond obvious that Dublin Zoo's tiny, bland enclosure does not allow its elephants to behave "as they would in the wild". Reasons are presented throughout this report.

*"Research has shown that the elephants at Dublin Zoo travel nearly 10 km a day. This is similar to Asian elephant herds in the wild"*²⁴²

This statement, which draws on a scientific study,²⁴³ sounds impressive, but its methodology is significantly different from field studies of free-ranging wild elephants.²⁴⁴ In the Dublin Zoo study, every small, localised movement was logged and added up to the total for a 24-hour period. Field studies have generally involved the deployment of radio, satellite or GPS collars and have documented the large-scale movements of elephants across landscapes. If all localised steps and shifts of position by wild elephants were also noted, as in the Dublin Zoo study, the resulting estimates of distance walked would be much greater. To put it another way, the two sources of evidence are not directly comparable and the estimate of 10km "walked" by the Dublin elephants cannot be equated to the distances covered by their wild counterparts.

With this caveat in mind, it is also noteworthy that those 10km of steps taken must be squeezed into an enclosure with a mean width of less than 100m. There is no equivalence in experience between an elephant engaged in foraging and in purposeful walking in the wild and one repeatedly plodding back and forth over the same limited ground in Dublin Zoo's little enclosure.²⁴⁵ On some days, wild Asian elephants may indeed walk just a kilometre or two, but over a year they cover areas of hundreds of square kilometres.²⁴⁶ With their long legs and economical walking gait, elephants are self-evidently specialized for long distance living.²⁴⁷

Wild Asian elephants feed on dozens of species of grasses, shrubs, climbers, herbs and trees, with strong seasonal variation.^{248,249,250} They eat leaves, seeds, grass, tubers, bark, roots, flowers, fruits, vines and twigs. Natural feeding requires the expression of a variety of behaviours such as: cropping grass with the trunk; extracting seeds from flowers and buds using the trunk fingers; twisting and ripping off branches using the trunk then manipulating them using feet and trunk; root digging and cleaning using the feet and trunk; bark stripping using teeth, tusks and feet; knocking trees over using the head and body.^{251,252} Each item of food requires specific processing and handling, including discarding soil and other contaminants. In the region of 150kg of fresh food is consumed daily,²⁵³ but it can be much more. Asian elephants feed for nine to 11 hours during daylight hours alone and commonly feed for much of the night as well.²⁵⁴

The foraging opportunities presented to wild African elephants and their responses to it are similar to those of Asian elephants.^{255,256}

Elephants at Dublin Zoo have little or no access to their natural food, live vegetation. Elephants' diets in Western zoos clearly lack the variety of those in the wild. This dietary simplification risks markedly reducing the robustness of elephants'



intestinal microbiota networks and is suspected to increase the likelihood of digestive problems.²⁵⁷ In addition, very restricted variety in captive diet presentation concurrently reduces opportunities to express natural feeding behaviour.

The quantity of forage and greater time spent feeding in the wild does not equate to a daily intake of more nutrients by wild than by captive elephants. Because much of wild forage is composed of structural plant material, the intake of digestible nutrients is lower, though of much greater diversity. Captive elephants, including those at Dublin Zoo, are thus on a higher nutritional plane and prone to obesity, as noted in section 2.4.

2.11 Justifications for keeping elephants at Dublin Zoo

Nowadays, zoos such as Dublin Zoo claim an overarching conservation purpose, yet they were not founded as conservation organisations in the way that, for example, World Wide Fund for Nature or the International Union for Conservation of Nature (IUCN) were. They were and still are primarily displays of captive animals for the pleasure of humans.²⁵⁸ The conservation justification was added in more recent decades as public unease at animal captivity grew,^{259,260,261} and the constraints of their original purpose can make zoos' conservation intentions difficult to implement.

“We have achieved substantial conservation impact through our involvement in the breeding of threatened species, our support for conservation and research projects in the wild, and our conservation education and advocacy work”²⁶²

When applied to its elephant programme it is difficult to find an evidential basis for this statement from Dublin Zoo.

Dr. Paul Rees, a scientist with extensive involvement in zoo elephant research, has conducted a review of the role of zoos' captive elephants in conservation, education and research. There is nothing to suggest his comments in general do not apply to Dublin Zoo:

*"It is naïve and disingenuous for zoos to suggest that elephants living in zoos have any current, or will have any future, impact on elephant conservation. There is no substantive evidence that the presence of elephants in zoos contributes to the education of the public on matters concerning elephant conservation... Very little of what has been discovered about the biology of elephants in zoos has had a direct impact on the animals' survival in the wild and the keeping of elephants in zoos receives little support from elephant field biologists."*²⁶³

2.11.1 Breeding elephants for conservation

Many elephants in zoos today were wild caught. Catching wild elephants for zoos does not meet with the approval of eminent elephant conservation bodies. The African Elephant Specialist Group (AfESG) of the IUCN Species Survival Commission (SSC) *"does not endorse the removal of African elephants from the wild for any captive use"*.²⁶⁴ A draft position statement from the Asian Elephant Specialist Group (AsESG) *"advises that the capture and removal of Asian elephants from the wild is not ideal for supplementing captive stocks and should be avoided."*²⁶⁵ The export of Sumatran elephants to save struggling Western zoo populations was opposed by, amongst others, the chair of the AsESG.²⁶⁶ In 2019 the Parties to the United Nations' Convention on International Trade in Endangered Species (Cites), tightened restrictions on the removal of baby African elephants from the wild for trade to zoos.²⁶⁷

As for the elephants already in zoos, whether wild-caught or captive bred, zoos such as Dublin Zoo claim an important role in conservation through captive breeding.

Conservation authorities take a different view. Breeding of elephants in zoos, or captivity in general, is not identified by the IUCN SSC Red List as a conservation priority for any species of elephant. The AfESG *"does not see any contribution to the effective conservation of the species through captive breeding per se"*.²⁶⁸ Breeding of Asian elephants in zoos, or in captivity in general, is not identified as a conservation priority by the AsESG,²⁶⁹ but it is by Dublin Zoo:

*"We have now successfully bred two generations of elephants at Dublin Zoo, making a substantial contribution to the conservation of this species"*²⁷⁰

There is no evidence of a "substantial contribution" made by breeding elephants at Dublin or any other zoo. It is much more the case that Dublin and other elephant-keeping zoos:

“now find themselves in the position of having retrospectively to find a justification for continuing this practice, especially in the light of the increasing interest in elephant welfare being expressed by animal welfare organisations, governments and the general public.”²⁷¹

With funding from the (US) Institute of Museum and Library Services, a research team undertook the largest zoo elephant welfare research project ever conducted: a multi-institutional, multi-disciplinary assessment of a range of welfare indicators, using an epidemiological methodology, for 255 elephants in relation to husbandry and housing at 68 zoos accredited by the Association of Zoos and Aquariums (AZA).²⁷² In 2016 this huge effort resulted in the publication of nine papers in the journal PLOS ONE in a collection called “Epidemiological Investigations of North American Zoo Elephant Welfare”.²⁷³

The authors of a short overview paper prefacing the collection stated that this extensive study was important not just for improving elephant welfare but:

“because amidst the global decline in elephants, these analyses have implications for conservation of a species in crisis, since welfare impacts demography, including longevity and reproductive success. Thus, effective research in captive facilities can fill key knowledge gaps, to which the series of papers contribute.”²⁷⁴

It is therefore significant that in the collection’s introductory paper no mention is made of conservation.²⁷⁵ No rationale of any sort is made for keeping elephants in zoos, whether for conservation or education, in any of the nine papers despite the profile given throughout to poor welfare, which surely demands a justification.²⁷⁶

Turning to Dublin Zoo, it is unsurprising that its breeding efforts make no difference to elephant conservation. As an illustration, the real Kaziranga’s elephant population is 500 times greater than Dublin Zoo’s.²⁷⁷ There are over 13,000 captive elephants in Asian elephants’ natural range states.²⁷⁸ What difference can those few extra captive births at Dublin Zoo make, especially when, sadly, the one calf that comprised the second of those generations died aged just seven? Fifteen of 24 (62.5%) of Asian elephants born in the UK’s zoos between 2006 and 2019 had died by age three. 51% had died before five years.²⁷⁹

“... an important step to support the worldwide demographic and genetic backup to wild Asian elephant populations”²⁸⁰

We are unsure what is meant by this statement. As pointed out above, a very small and highly fractured total captive population of Asian (and African) elephants, together with high captivity-induced mortality means zoos simply are not and are unlikely to ever “support the worldwide demographic”. Realising the potential of the claimed “genetic back up” presumably means Dublin Zoo either thinks of itself a museum-like collection of elephant genes, isolated from the wild, or is considering reintroducing elephants to their native habitats.

Breeding elephants for reintroduction

Although zoos such as Dublin Zoo may claim that the captive “population” of elephants in European zoos preserves an option for reintroduction at some undefined point in the future in the face of catastrophic loss of wild populations,²⁸¹ there is no genuine justification for breeding elephants in Dublin Zoo or any other Western zoo for this purpose. In the case of Asian elephants, should captive populations ever have such a role, that purpose would be much better served by the thousands of captive elephants already in Asia, some of which are already leading semi-wild existences. In Africa, repopulation would be more effectively done through natural dispersal through wildlife corridors. Even though 62% of Africa has suitable habitat for elephants, the animals use just 17% of that habitat and are currently absent in the remaining 83%.²⁸² If captive breeding for reintroduction does occur, it should be carried out in the country of species’ origin, making sure to engage the local communities.²⁸³

The negative aspects of captive breeding for reintroduction are well-known: *“the heavy costs involved, the possibility of inbreeding depression, and only a limited portion of the gene pool being conserved. Sometimes zoos have to compromise the crucial skills for wild survival and captive breeding can also affect animal health and well-being”*.

Unsurprisingly, there has been limited success: of 145 reintroduction programs for various species (none of them elephants) carried out by zoos in the last century, only 16 (11%) truly succeeded in restoring wild animal populations to the wild.²⁸⁴

Due to the obvious contrast between natural habitats and their own exhibits, zoos may have an uncomfortable relationship with the wild, exemplified by the response of ZSL Whipsnade when asked why it didn’t repatriate its elephants: *“The simple answer is that it wouldn’t be right for the elephants... The sad truth is that the wild is not quite the haven it can be made out to be.”*²⁸⁵ This statement is more telling about the attitude of the zoo than the reality, since, as noted in section 2.4, elephants’ survival is worse in zoos than in their natural range states. The EAZA EEP is rather more open to the idea of reintroducing males when it helps them solve their problem of excess males,²⁸⁶ but EAZA cautions that reintroduction of such males *“would require well-adjusted, socialized bulls that had grown up in appropriate social scenarios”*.²⁸⁷ Given the effect zoos have on male development we very much doubt zoo-born males would make suitable candidates (see section 2.8).

It is important to note that this does not mean there should be no consideration of repatriating captive elephants. If such moves are carefully thought through there is a role for them as compassionate actions to improve the lives of individuals, not as conservation measures. Repatriating elephants in such circumstances is intended as an endpoint to captivity, whereas breeding in zoos is a justification for continuing it. Rehabilitation of captive elephants and release to natural or semi-wild habitats is a complex and lengthy process that requires much dedicated attention and expertise. It has been attempted with some success for Asian elephants²⁸⁸ and African savanna elephants²⁸⁹ held in captivity in range states. There is only one example so far of

an elephant held in a zoo being released in the wild: in 2020, Kavaan, a male Asian elephant in his mid-30s who was held in a zoo in Islamabad, Pakistan was transported to a sanctuary in Cambodia.²⁹⁰ The move came after an international campaign, raising the considerable funding needed, and involved transport by air and intensive management. He is reportedly healthy but will require monitoring and support for decades to come to ensure his successful reintegration in the long term.

It has never been the case that captive breeding for conservation and release into the wild of elephants born in Western zoos has been the primary reason for taking elephants from wild ecosystems. Instead, the motivation has always been public display for entertainment. The negative effects of zoo captivity on welfare, breeding and longevity are well-established. If anything, removal of elephants from their ecological roles, and keeping them indefinitely in confinement, has proven to be the opposite of conservation.

Away from their public statements, zoos do not always claim captive elephant can act as “insurance populations” either as captive back-up populations or for reintroduction. They now largely pin their justification to supporting conservation in the wild, and on education.²⁹¹

2.11.2 Supporting field conservation

“Dublin Zoo also proudly supports in situ efforts to conserve elephants in the wild through our conservation partners in India, helping to secure critical elephant habitats and reducing human-elephant conflict”²⁹²

“Between 2015 and 2019, Dublin Zoo provided over €50,000 in financial support to a project focussed on conservation planning for elephants in the Kaziranga-Karbi Anglong landscape in Assam, India. This project is run by the Asian Nature Conservation Foundation (ANCF)”²⁹³

These claims should be examined because Dublin Zoo considers supporting wild elephants a justification for keeping others captive. Over four years the donation was just €12,500 a year (about 0.05% of Dublin Zoo’s total yearly expenditure²⁹⁴). ACNF’s website^{pp} listed over thirty donors, but none is Dublin Zoo, maybe because of the apparent dearth of donations before and after 2015-19.

Dublin Zoo says it partnered with Wildlife Trust of India in 2022, and there is a statement from WTI thanking Dublin Zoo for a donation.²⁹⁵ We could not find a

pp. The website (<https://www.asiannature.org/>), checked January 2025, is currently defunct (22/4/2025)

statement of the amount of the donation, nor whether it was preceded or repeated. Neither can we find mention of either donation or partnership on the WTI website, although there is a brief thank you on WTI's LinkedIn page.²⁹⁶

The question must be asked whether it is essential for Dublin to keep elephants captive to make these donations. Paignton Zoo's last elephant died in 2019, and even though the zoo will not replace her, it continues to support elephant conservation in the Omo Forest Reserve in Nigeria, as it has since 1997. Paignton Zoo states:

*"Visitors are therefore still helping protect elephants when they visit our zoo, even though we no longer have any here."*²⁹⁷

Furthermore, bodies which are not zoos or even conservation organisations raise money for wild elephant conservation. In 2013, the Independent newspaper raised over €400,000 for elephant conservation projects in East Africa.²⁹⁸

In comparison to the apparently small and perhaps intermittent funding of wild elephant conservation, Dublin Zoo's yearly bill for caring for its four elephants is certainly hundreds of thousands of Euros. In 2012, Dublin Zoo was looking for sponsorship for €500,000 a year for the Kaziranga Trail elephant breeding programme.²⁹⁹ It cost Dublin Zoo at least €75 a day (€27,375 per year) to feed one elephant in 2020.³⁰⁰ In 2024, Dublin Zoo was estimated to have spent €100-150,000 on treating its five elephants for EEHV.³⁰¹ It may be useful to comparison that Whipsnade Zoo's elephant programme was estimated at ≈£600- 640K per year in 2019.^{qq 302}

We have been unable to find a cost for construction of the Kaziranga Trail. One estimate is €5+ million,³⁰³ which would not be unreasonable. In 2007, Western zoos were estimated to have spent ≈\$53 million per year on maintaining just 195 – 244 elephants. In total, over the period 1999 to 2007 zoos spent over half a billion dollars (US\$ 542,008,000 – likely to be an underestimate) on facility upgrades ranging from completed facilities to those still being planned, and including construction, renovation and elephant acquisition costs. In 2008, the costs of keeping African elephants in zoos were estimated at nearly a hundred times more than conserving them in the wild.³⁰⁴ In contrast, in 2021 the Kenya Wildlife Service protected the country's population of 36,280 elephants^{305 rr} and hundreds of other species, on a budget of <€49 million.³⁰⁶ In 2008 an estimated €9.5 million could have reduced retaliatory killing and compensated Sri Lankan farmers for the damage done by the island's 3,500 Asian elephants.³⁰⁷

qq. Figure excludes indirect staffing costs and ground rent. Whipsnade ≈6 elephants and ≈8ha, v. Dublin's 4 elephants and 1ha

rr. Successfully – Kenya's 2021 elephant population has more than doubled over the years from 1990.

Until 2016 at least, Dublin Zoo did not appear to include making substantial donations to wild elephant conservation part of its business plan. Then zoo director Leo Oosterweghel said:

“Dublin Zoo brings in between €12 and €13m a year... As it’s a charity, all the money is reinvested back into the facility”³⁰⁸

Under the Asian Elephant Conservation Act 1997, the United States government used funds from the Asian Elephant Conservation Fund to fund conservation of wild Asian elephants in the range states, but not of captive Asian elephant programmes in zoos. Nor does the Act allow for funding of captive breeding except for purposes of release into the wild.³⁰⁵ Similarly, the UK government supports elephant conservation in the wild, but not (claimed) conservation effort in zoos.³⁰⁹ Both programmes may use zoological societies, which may be associated with zoos, to administer funds, but this does not mean money goes to the zoos, and neither does it require the zoos to keep elephants.

2.11.3 Education

The education program at Dublin Zoo is described yet we cannot find mention of evaluation of its success.³¹⁰ Dublin Zoo may not know whether its education program induces people to take conservation action, but it does speculate:

“Simultaneously, the extensive use of plants, and a trail with unique viewing areas, has helped to create a truly immersive experience for our visitors, and gives us the chance to deliver conservation messages about elephants in the wild”³¹¹

Zoos claim educating visitors on conservation is a huge priority for them.³¹² There is an extensive scientific literature on zoo education programmes which includes valuable analyses of the importance of educational programme design, clearly defining terms and targets, and of evaluating success (see review³¹³). The most important role of such education is to foster pro-environmental behaviours in the zoos’ visitors, meaning behaviours that seek to minimize human impact on the environment and directly support conservation. Of course, the effect of such education must be evaluated to ascertain whether behaviours have been changed.

There is no substantive evidence that by keeping elephants captive Dublin Zoo (or any other zoo) educates and inspires visitors to the extent that they are provably

ss. Asian Elephant Conservation Act. 16 U.S.C. 4261-4266, 1538. §4264. Asian elephant conservation assistance. Section (h) Limitation on use for captive breeding. <https://www.govinfo.gov/content/pkg/US-CODE-2011-title16/pdf/USCODE-2011-title16-chap62A.pdf> Figure excludes indirect

motivated to do something positive for conservation of wild elephants, compared to those who don't visit zoos.

“Unless independent scientists are able to demonstrate conclusively that visitors exposed to elephants living in zoos are more likely to support elephant conservation as a result – and more likely to do so than if only exposed to other information about elephant conservation in the media and elsewhere, or to museum specimens – then it is difficult to see how zoos can continue to justify an educational function in keeping them.”³¹⁴

Even zoos sometimes question the success of their education programmes in eliciting real change.^{315,316}

2.11.4 Research

“The elephants at Dublin Zoo have provided critical insights and have contributed to multi-institution research on a huge variety of topics, ranging from veterinary care to animal behaviour and animal physiology, all of which have helped inform animal management practices and conservation actions.”³¹⁷

This is a very big claim for the value to conservation of Dublin Zoo's elephant research programme. As it is used as justification for keeping elephants in captivity it is important to look at it more closely.

Dublin Zoo states that its elephant programme has contributed to 14 peer-reviewed scientific publications,³¹⁸ of which the earliest was written in 2008 and all but two were written since 2017.³¹⁹ Of the 14 papers, 12 concern husbandry of captive elephants and have no relevance to wild elephants, let alone conservation. One on EEHV compared the efficacy of oral swabs and trunk washes in the detection of EEHV shedding, and concluded the latter were superior. This is a useful result for care of captive elephants but impractical and dangerous for testing EEHV in wild elephants.

That leaves one of 14 papers with potential importance to something besides keeping elephants in zoos. This study contributed to identifying decay rates in DNA from dung samples from wild African savanna elephants, streamlined a sample preservation methodology, and identified a previously undetected sub-clade of savanna elephant in the study area.³²⁰ Researchers from University College Dublin developed a methodology to test collection methods and develop lab protocols using dung and mouth samples from Asian elephants at nearby Dublin Zoo.

On the face of it, this contribution by Dublin Zoo seems valuable. However, Dublin Zoo's elephants are Asian not African, and dung sample DNA has been obtained, amplified and identified from a wide variety of species. It might have made testing of the methodology easier, but had elephants not been kept at Dublin Zoo it would surely have been possible to test methodology using dung samples from the study

site itself, which is part of the Tsavo-Amboseli ecosystem; Amboseli is well-resourced to undertake different kinds of research. There is an extensive literature on research involving analysis of dung-derived DNA from African savanna elephants in Amboseli and elsewhere, dating from at least 2003.³²¹

Dublin Zoo's contribution was not essential and given the rarity of even marginally important contributions to conservation from Dublin Zoo's elephant programme, there is no justification for its keeping elephants. It is widely understood that most research on elephants conducted in zoos is aimed at welfare and husbandry in zoos.³²² It is difficult to argue with the conclusion of Rees:

*"We cannot justify keeping elephants in zoos merely to conduct research on the behavioural, health and reproductive problems caused by captivity"*³²³

2.12 Changing times

2.12.1 Public and political pressure

A paper written in 1998 by Taylor and Poole³²⁴ presented for the first time a scientific basis for the sense of unease felt by some over the captivity of elephants in zoos. The welfare concerns raised in that study were confirmed later by larger scale, more in-depth studies but unfortunately at the time it appeared to have little effect in raising the profile of captive elephants amongst the public. It also appeared to register little with zoos.

Four years later, the subject started to come under much more intense scrutiny, which has not lessened since. In the UK alone, there have been two government-sponsored scientific evaluations^{325,326} which followed one independently conducted study by Oxford University³²⁷ which generated international publicity and forced zoos worldwide to react.^{tt} Public opinion is on the side of elephants, and against keeping them in zoos:

*"In a survey conducted in March 2022, 89% of people agreed that elephants belonged in the wild and not in zoos. 91% believed that elephants should be given more space than is provided for in zoos"*³²⁸

The public appears less persuaded by old, flawed zoo arguments. Intuition that giant elephants do not belong in tiny zoos is resoundingly backed up by science. Sir David Attenborough sums up:

tt. See for example the multiple references in BIAZA and EAZA Guidelines

“Thankfully, we now have a much deeper understanding of the needs of elephants and we have a choice about how to care for them. They need to be in the company of their own kind to build lasting relationships, and they need space to live their lives.”³²⁹

Unfortunately, Dublin Zoo seems not to share that understanding: its elephant breeding programme is sited in such a small space that the deliberate separation of elephants to other institutions is inevitable.

There have been many robust challenges to the keeping of elephants in zoos, with an explicit or implicit call to either vastly improve or stop altogether the keeping of elephants.^{330,331,332,333,334,335,336,337} Zoos recognize the challenge but have not been able to implement practicable solutions.^{338,339}

BIAZA stated in 2019:

“Elephant holders ... must not underestimate the potential for the government to ban the keeping of elephants in the UK should they feel that significant progress in elephant welfare has not been made”³⁴⁰

The UK’s Zoos Forum (now the Zoos Executive Committee) warned nine years earlier:

“However, if solutions to welfare problems and threats cannot be found, if no or negligible evidence of improved health and welfare can be observed, and if there is no compelling reason to breed elephants in the UK, then, in our opinion zoos should take steps to stop keeping elephants”³⁴¹

Lord Henley, then Parliamentary Under Secretary of State at Defra, wrote to BIAZA in January 2010 asking it to drive forward a programme of evaluated improvements over a ten-year period. He cautioned:

“I should say that such is my concern about the welfare of elephants in UK zoos that I have not ruled out the option of looking at the scope for phasing out the keeping of elephants in the UK in the future if there is little or no evidence of improved welfare.”³⁴²

Lord Gardiner of Kimble at an elephant stakeholder meeting in February 2017 said that a phasing out of elephants from UK zoos was a possibility if improvements were not evident.³⁴³

2.12.2 Declining numbers

In Europe, the number of elephants in zoos (580)³⁴⁴ is similar today to what it was in 2001 (560).³⁴⁵ Between 2010 and 2021, 21 zoos (8 EAZA and 13 non-EAZA) started keeping elephants and 22 stopped (11 were EAZA and 11 non-EAZA).³⁴⁶

In contrast, in the British Isles there is a clear downward trend, both in the number of elephants and the number of zoos keeping them. In 1995 there were 21 zoos in UK and Ireland with elephants. There were 72 elephants in 1995³⁴⁷ but the number had risen to 100 by 2001.³⁴⁸ By 2010 these figures had dropped to 13 and ≈70 in UK.³⁴⁹ In 2019 the figures for UK were 13 and 54.³⁵⁰ At the time of writing, 11 British and Irish zoos keep 54 elephants.³⁵¹ On the island of Ireland the number of elephant-keeping zoos has dropped from two to one with the departure of both of Belfast Zoo's elephants to the Netherlands in 2024. Belfast Zoo recognised that they could not provide the specialist care that their two remaining elephants needed.

The downward curve in facility numbers is even steeper in North America. Since 1991, 34 AZA accredited North American zoos have closed their elephant exhibits.³⁵² By 2022, only two had begun keeping or had restarted keeping elephants.³⁵³ The number of AZA accredited zoos holding elephants in the US appears to have dropped from 67 to 49 in the last decade.³⁵⁴

These data challenge the belief that the benefits of keeping elephants (conservation, good PR, financial, education, research) justify the costs (financial, bad PR).^{355,356,357,358}

2.12.3 Banning elephants from zoos

Political and public attitudes to elephants in captivity are changing.

India banned elephants from its zoos in 2009.³⁵⁹

In 2019 Barcelona Zoo in Spain announced the end of captive breeding of its animals, including African elephants.³⁶⁰

Argentina has not banned elephants from zoos, but the country's six elephants were transferred to Global Sanctuary for Elephants in Brazil between 2020 and 2025. The elephants came from the Buenos Aires Zoo which started to convert from a traditional zoo into an eco-park in 2016, and Mendoza Zoo.³⁶¹

New Zealand ended 100 years of elephant keeping on 12th November 2024 when it transferred its last elephant to an Australian zoo.³⁶²

Following 11 years of litigation the government of Costa Rica, often progressive in animal protection,^{uu} has closed all state-owned zoos.³⁶³ No elephants are known to live in private zoos in Costa Rica.

uu. Costa Rica banned wild animals in circuses in 2002 and sport hunting and the capture, trade and possession of native wild animals as pets in 2012.

Proposed legislation introduced in 2023 in Canada (Bill S-15) aims to prohibit possessing, breeding, or impregnating elephants (and great apes) in captivity and to prohibit using them for entertainment purposes.³⁶⁴

The UK government held two relevant consultations in 2022. One was on standards of modern zoo practice for Great Britain, which included proposals to improve standards for elephants held in UK zoos.³⁶⁵ The other was on the future of elephants in UK zoos.³⁶⁶

Other precedents

Internationally, decisions have been made to stop the keeping of some species in certain situations.

Wild animals including elephants have been banned from circuses in 34 European countries (Czech Republic only bans wild animals born, donated or bought after 1st January 2022). Outside Europe, 19 states have passed legislation banning wild animals in circuses³⁶⁷ (although in four cases it is uncertain whether elephants are banned).

In January 2018 the Republic of Ireland banned the use of wild animals in travelling circuses, followed by Scotland in May 2018. Wales and England followed in 2020.³⁶⁸ In the British Isles banning legislation only remains unpassed in Northern Ireland.

Cetaceans, including orcas and dolphins, have long been regarded as unsuited to captivity.³⁶⁹ Internationally eleven countries have full or partial bans on keeping dolphins in captivity (five in Europe), as do three US states. Five countries have laws so restrictive that they are de facto bans (including three European countries of which UK is one). France announced a ban in 2020, and in the same year the Brussels Capital Region announced it was working on a ban to keep the territory free of dolphinariums.³⁷⁰ In 2015 there were a total of 332 dolphinariums in the EU. Fifteen Member States had dolphinariums, while 13 including Republic of Ireland and UK did not.³⁷¹ The Flemish (Belgium) government has determined that Flanders will permanently ban the captivity of dolphins by 2037 and that by that time the last remaining dolphinarium, the Boudewijn Seapark, must close.³⁷²

2.12.4 Space and climate

We believe elephants should be in captivity only when a life in the wild would be impossible or unethical to bring about, and when it is in an individual's best interests. On such occasions, only large, complex, natural or naturalistic facilities in species-appropriate climates are apposite. Such facilities can offer a life worth living, but even they cannot fully meet elephants' needs.^{373,374} As described in section 2.4, there appears to be a lethal birth or very early neonatal effect of being born in a zoo, and breeding programmes are far too often associated with highly damaging transfers and group disruptions. The largest captive space cannot host the full expression of natural elephant behaviour, whether movement and foraging choices or in providing for the composite social dynamics of elephants numbering from one to several hundred or more. For these and other reasons we are opposed to breeding in captivity, even in the best facilities.

Despite the clear need to acknowledge elephants' requirement for quality space there appears to be a reluctance to accept that elephant enclosures are too small. For example, the CEO of BIAZA believes "... that the majority of [UK elephant] enclosures are already of sufficient size and complexity" and that "... we are getting the levels of space, complexity and management systems right".³⁷⁵ The average size of an elephant enclosure in the UK in 2021, incorrectly expressed as a mean, was less than 2ha.³⁷⁶ The median was 1ha.³⁷⁷

Traditional zoo bodies and traditional zoos risk being left behind. The obvious importance of abundant diverse space to Asian and African elephants³⁷⁸ has been increasingly recognized by forward-looking projects in Africa, Australia, Asia, Europe, North America and South America. These take several forms, united in a belief that abundant natural space, and the choice it offers, is essential to significantly improving the welfare of captive elephants. Such projects can very large, fenced facilities,^{379,380,381,382} progressive tourism models,^{383,384,385} or release to the wild projects.^{386,387,388,389} More are under development.^{390,391}

Each of these projects and more of similar type is founded on the belief that abundant, diverse space in an appropriate climate allows elephants to exercise more natural behaviour and improve their welfare. Anecdotal descriptions of the success of such schemes³⁹² has recently been backed by evaluation.^{393,394,395,396,397,398} IUCN SSC guidelines for releasing Asian elephants have been drawn up.³⁹⁹

Even though we are strongly opposed to captive breeding in zoos, we recognize the efforts of a handful of zoos where elephants are provided with substantially larger enclosures.^{400,401,402} Ultimately, however, as we outline above these spaces remain insufficient to satisfy the needs of elephants, and the difficulties are compounded if breeding is practiced. Growing numbers of females and, particularly, males simply cannot be accommodated effectively and humanely inside fenced enclosures. We believe that breeding in such facilities will ultimately lower welfare again, and this point will be reached quicker in temperate climates.



3. Conclusions and recommendations

3.1 Conclusions

Elephants are ecosystem engineers, affecting the environment in which they live as it affects them. In nature, they are valuable agents in carbon sequestration. They are highly sentient and intelligent beings who live their lives over vast expanses of tropical and subtropical habitat in complex societies typified by close, enduring bonds, making countless decisions that employ their advanced cognition and deep memories daily. Elephants have long legs and acute senses of smell and hearing – their bodies have been described as evolved “for long-distance living”.⁴⁰³ They have voluminous, fermenting hindguts,⁴⁰⁴ and can reach 12 metres to tear off branches, bite off bark at head-height, kick out a root, or reach down to pick up tiny seeds. They are clearly adapted to consume huge quantities of vegetation of immensely varied form and species composition.

Accordingly, elephants are obviously maladapted for life in captivity in the confined, simplified and controlling conditions of zoos, but zoos appear unable or unwilling to implement the learnings of biology, preferring instead to rely on their own often baseless “standards”. Over twenty years of research has established that captivity causes severe psychological and physical welfare problems in elephants. The exposure of such problems to the public eye has paralleled efforts to improve conditions in

Western zoos. Such efforts have been rewarded by limited improvement in welfare, but only in soft-target areas long overdue for improvement, such as a reduction in foot disease caused by standing for too long on concrete. Fundamental problems remain, including a sixty-year-old failure to improve the longevity of elephants born in zoos. Yet zoos persist with keeping elephants even though the consequences of doing so continue in the form of psychological and physical ill-health and premature death.

While many zoos may want the best possible welfare for their elephants, a lot rests on the word “possible”. It is simply not possible for zoos to provide for anything but a fraction of the needs of elephants, as is so obvious from witnesses to the lives of wild elephants and as has been outlined clearly throughout this report. Much of this shortfall is simply because there is not enough species-appropriate space in zoos, and because so many zoos are in climates for which elephants are not adapted. Furthermore, zoos may still claim an imperative to keep elephants for what they consider conservation purposes. Effective conservation programs evaluate their success,⁴⁰⁵ but there is little evidence that zoos have done this. For example, we could find little data-based proof that Dublin Zoo contributes meaningfully to educating the public on conservation, supporting field conservation, or conservation research. We found that Dublin Zoo, along with other elephant-keeping zoos, claims that keeping elephants makes a vital contribution to managing EEHV, and that this will help wild elephants. Yet there is little or no evidence that wild elephants need such help, and EEHV appears to be a major problem only in captivity.

Zoos’ efforts to improve welfare are not only constrained by lack of space and, often, inappropriate climate, but also by their self-imposed obligation to breed elephants, ostensibly for conservation. Conservation in the wild is not reliant on breeding in zoos; it is more likely to be the other way round. We have found no proof that a zoo’s efforts to educate or to raise funds for conservation relies on keeping elephants captive. There is very little evidence from governments, international non-governmental organisations and elephant conservation practitioners to support the notion that breeding elephants in zoos is an important form of elephant conservation. The number of zoos keeping elephants has declined sharply in the British Isles, but we are aware of no claim from conservationists or zoos that elephant conservation has suffered.

Yet in some zoos, including Dublin Zoo, breeding elephants remains a *raison d’être*. This is where a further insult to elephants’ well-being is introduced. Under the auspices of EAZA elephants are shunted around the zoos of Europe to maximise the genetic potential of disjointed, widely distributed collections of African and Asian elephants. Groups are broken up, elephants are separated far too young, and elephants’ lifespans are threatened by the stress induced by transport. Males are kept in conditions often worse than the females’, often solitarily and with barely a concern for their natural social and behavioural development. Shockingly, EAZA requires that zoos maximise the opportunities provided by the premature puberty induced by captivity, and breed their elephants when still juvenile, even though there are negative consequences for mortality of dam and calf. Dublin Zoo is a willing participant in this reprehensible practice.

An increasing number of projects have recognised the provision of abundant space especially in appropriate climates as keys to improving welfare. These may be categorised as large zoos, sanctuaries, progressive tourism projects involving semi-wild elephants, and reintroduction. In each category, we applaud those projects where the welfare of individuals is the primary aim, standards are high, and where elephants are truly offered a “life worth living”.⁴⁰⁶ However, as evidenced throughout this report, not even these projects can truly provide for all the needs of elephants (except for expertly managed reintroduction^{vv}). Therefore, all captive elephant projects should have three equally important priorities, the first of which is to maximise welfare for individuals. The second is to end breeding and importation, because the positives of doing so resoundingly outweigh any downsides; the importance of this becomes even more stark when thinking of possible scenarios a few decades ahead. The third is to meaningfully and measurably support the conservation of wild elephants in the range states.

3.2 Recommendations

We make the following recommendations:

1. Given the clear evidence that elephants suffer in zoos and the notable lack of justification for keeping them, we are calling on governments to introduce a phase out of elephants from zoos (and, of course, circuses and other facilities that fail to recognise elephants’ needs), starting with an immediate prohibition on the breeding of elephants and an immediate prohibition on their import.
2. We call for the existing zoo population to be treated in accord with the ethics underlying these recommendations. Elephants must be kept humanely in the best possible conditions until they die and must not be exported to inferior conditions or to any situation where either male or female will be used for breeding, whether through natural mating or artificial insemination. Exports should only be permitted for release to the wild schemes or for movement to true sanctuaries. We extend this list of suitable destinations to zoos or safari parks with significantly more space which allows elephants to express most of their desired behaviours and to forage more normally, provided they implement a non-breeding regime.
3. We call for any facility that keeps elephants which claims it is assisting conservation of wild elephants to evaluate that claim using appropriate scientific measurement, to subject these analyses to independent scientific scrutiny, and to publish the outcomes.

In the case of Dublin Zoo, it is notable that it is the only zoo on the island of Ireland that keeps elephants. The implementation of the recommendations we propose would, we believe, have only positive effects, on elephant welfare, and on the reputation and financial circumstances of the Zoo. We firmly believe this to be the case for any zoo that still keeps elephants – they will benefit as the elephants do.

vv. Here, provision is made for an elephant to lead a fulfilling and natural life. In contrast, an elephant in a big enclosure has no chance to behave completely like a wild elephant.

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Freedom for Animals is a UK-based charity leading the campaign to end the captivity of animals, especially those used for entertaining the public in zoos, mobile zoos, aquariums and circuses.

Our Mission

1. We take action to end the captivity of animals, especially those used for entertaining the public in zoos, circuses and the media industry.
2. We carry out investigations and research to provide a solid evidence base for our campaigns and political lobbying.
3. Our educational work and awareness raising promotes a more compassionate attitude and relationship between humans and other animals.
4. We undertake high level work to educate policy makers whilst continuing to support grassroots activism, the very foundations of Freedom for Animals.
5. We work in partnership with organisations that share our values and amplify our campaigns.

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