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11. The future of elephants in captivity

Donlan et al. (2006)

11.1 Introduction

Although humans have been blamed for previous mass extinctions of animals (Sandom et al., 2014) Faith et al. (2018) have challenged this view and have shown that megaherbivores in eastern Africa (e.g. elephants, hippopotamuses, rhinoceroses) began to decline about 4.6 million years ago, preceding evidence for hominin consumption of animal tissues by more than 1 million years. They suggest the decline may have been triggered by a decrease in atmospheric carbon dioxide that led to an expansion of grasslands and the disappearance of the woody vegetation that many megaherbivores used for food.

Whether or not humans have been responsible for previous extinctions of proboscidians it is clear that human activity is responsible for the decline in elephant populations in recent times, especially due to poaching and human–elephant conflict. Unlike most wildlife species, in addition to living in the wild and in zoos, elephants also live in a semi-domesticated state in some countries. This affords a number of possibilities for securing their future survival.

11.2 Elephant ranching

In 1981 Dr Keith Eltringham – who at that time was lecturing at the University of Cambridge – delivered a paper to the British Association for the Advancement of Science warning of the possible extinction of the African elephant. Three years later he suggested that there should be a dual attitude towards elephants in captivity (Eltringham, 1984). First, traditional zoos would continue to keep small numbers of elephants. He suggested that elephants should be treated as domestic animals and trained for riding or given other jobs, provided with trees for shade and sand-pits for dust bathing, and that contact with
the keeper should act as a substitute for the presence of other elephants. Second, Eltringham suggested that if zoos are to achieve self-sustaining populations of elephants, large breeding groups must be established and that this would require ‘a specialized approach more like ranching than zoo-keeping’. Eltringham clearly considered the possibility that it might one day be ‘necessary to conserve elephants in captivity with the aim of eventual reintroduction into the wild’.

Eltringham did not predict that most zoos in the 21st century would not be giving elephant rides and that zoo visitors would be kept at a greater distance from elephants than was the case in the 1980s, when it was not uncommon for zoos to walk elephants through their grounds in close proximity to members of the public, while many safari parks allowed visitors to drive their own cars through elephant enclosures where there was no barrier to protect them from contact with the animals. Furthermore, he did not foresee the possibility that, such would be the concern for the welfare of elephants, some zoos would voluntarily stop keeping them and animal welfare organisations would create elephant sanctuaries where the animals would not be allowed to breed. Neither did he predict that the free contact system of handling elephants in operation by keepers in the 1980s would be replaced by a preference for protected contact.

In 2020, 36 years after the publication of Eltringham’s article, the zoo community is nowhere near achieving the level of commitment to the creation of a ranching system for elephants that he envisaged. Many zoos have given up keeping elephants, while others have built better facilities and are building larger herds, but nothing on the scale that Eltringham imagined. These zoos need animals and the zoo community will inevitably put pressure on governments to allow more animals to be imported into North America and Europe.

The concept of elephant ranching is not as outlandish as it might at first appear. In South Africa, white rhinoceroses (*Ceratotherium simum*) are bred on private farms. Buffalo Dream Ranch is owned by John Hume, who was removing rhino horns and selling them legally until the South African Government imposed a moratorium on the sale of rhino horns in 2009. Thereafter he stockpiled the horns in the hope that the moratorium would come to an end. In 2017 he successfully applied to the South African High Court to allow him to sell his horn by auction to raise money to fund his project.

Eltringham (1984) was right. If we need to breed elephants in captivity, this could be done in a method akin to ranching, preferably in the range states of the animals. There would certainly be challenges with this approach, but they would not be related to reproduction. We know how to construct elephant-proof fences — this has already been done in many locations in the wild (Kioko et al., 2008).

The organisation *ElephantVoices* (2019) advocates an approach similar to that of Eltringham, or replacing elephants in zoos with virtual exhibits:

*ElephantVoices’ standpoint is that elephants require complex social and environmental settings to thrive; to meet the interests of elephants zoos need to start thinking on the order of square kilometers.*

*Or, as an even better alternative, zoos can offer high-end virtual educational exhibits that through animatronics and multimedia connect the public to the capabilities and lives of wild elephants, while stimulating the interest in their conservation.*
Although Indian scientists and the Central Zoo Authority do not see a conservation role for Asian elephants living in Indian zoos – let alone a need to captive-breed them in other countries – some American scientists think they know better. In 2006 a group of 12 American scientists suggested that, rather than allow large mammals to be squeezed into smaller and smaller refuges in poor countries that cannot afford to protect them properly, they should be ‘reintroduced’ into the United States as substitutes for the large mammals that previously roamed the Great Plains in the Pleistocene. They proposed that elephants (*Elephas maximus* and *Loxodonta africana*) could be included in a ‘Pleistocene re-wilding’ of the Great Plains – where they might suppress the woody plant species that threaten the western grasslands – using animals from American zoos and domesticated elephants from Asia to replace the five species of proboscidians that once roamed North America (Donlan et al., 2005, 2006). They identify the construction of elephant fences to prevent conflict with humans as the major economic cost, but suggest the benefits of such a project would be ecological and economic, providing employment and income through tourism. Donlan et al. patronisingly suggested that many of the large mammal species of Africa and Asia are likely to be lost within this century and would have a better chance of long-term survival in America.

Donlan et al. were not the first to suggest that the warmer parts of the United States would be suitable for elephants. Eltringham (1984) suggested this some 20 years earlier:

*There are parts of the southern United States where winter cold is not a problem and perhaps it is there that one should look for a site for the elephant ark should one ever become necessary.*

Prof. David Bowman, a fire ecologist at the University of Tasmania, has suggested that elephants – and other large herbivores such as rhinoceroses – could be introduced into parts of Australia to help reset the ecological balance. In particular, he suggests that they could help to control gamba grass (*Andropogon gayanus*), an African species that has invaded savannahs in north Australia, is a restricted invasive plant under the Biosecurity Act 2014 and a major source of fuel for wildfires (Bowman, 2012). This ‘proposal’ – he does not believe this is a realistic possibility – would not primarily be an elephant conservation measure, but rather a vegetation and fire control measure, and he acknowledges that any large herbivores that were introduced would have to be managed to prevent further ecological damage in fragile ecosystems.

These proposals to create novel ecosystems – involving elephants and other large mammals – have generated considerable academic discussion. Some conservation biologists have warned of the possibility of the unintended consequence of creating new and undesirable interactions between species, while also recognising that ‘ecological replacement’ may be a useful response to the challenges of climate change (Seddon et al., 2011).

Donlan et al. and Bowman appear to have overlooked the fact that the United States and Australia have legal restrictions on introducing exotic species, for good ecological reasons such as the protection of indigenous biodiversity and preventing the spread of disease.
Translocation is increasingly being used as a strategy to reduce human—animal conflict. The Kenya Wildlife Service (KWS) has used translocation to address human—elephant conflict and restock elephant ranges since 1996. In 2002 the KWS relocated 56 elephants from Sweetwaters Rhino Sanctuary — which is completely surrounded by an electric fence — to Meru National Park (Omondi et al., 2002). This was the first time that the KWS had moved elephants in family groups. Five elephants died during the operations (8.9%). Prior to this, 141 elephants had been moved by the KWS in eight translocations, recording a mortality of 9.2%.

There are few carefully documented cases of the release of captive elephants to the wild, but there is some scientific evidence that such releases may succeed and that animals may not only thrive after release, but may also contribute to the growth of wild elephant populations.

Evans et al. (2013) reported the release of a captive-raised female African elephant in the Okavango Delta, Botswana. Nandipa was orphaned in 1989 (when she was 1 year old) by the elephant cull in Kruger National Park, South Africa, and taken — along with five other youngsters — to the Okavango Delta where she was trained to carry tourists on a saddle on her back at the age of 7 years. These animals joined a group of three adult elephants who had previously been held by zoos and circuses in Canada and the United States. Nandipa was fitted with a satellite collar and released in an area with which she was familiar in September 2003. The collar collected spatial and behavioural data for 17 months and the elephant was monitored less intensively for a further 5½ years. Although Nandipa did not fully integrate with a wild herd, she produced three calves and formed a social group with a female and her calf that were subsequently released from the same herd. Nandipa did not appear to experience aggression from the wild elephants with which she socialised and utilised an area similar to that used by wild adult females. Evans et al. suggested that releasing elephants in the wild should be considered as a viable option for some captive elephants.

The success of elephant reintroductions depends upon the establishment of stable social groups. Social groups in wild elephants consist of individuals who are genetically related, but this is not always the case when elephants are reintroduced. The genetic relatedness and behavioural relationships among elephants who had been reintroduced into forested areas in central and northern Thailand were studied by Thitram et al. (2015). They collected blood samples — for DNA analysis — from 53 elephants prior to their release in Sublanka and Doi Phamuang Wildlife Sanctuaries, made direct observations of social bonding behaviours for the following 12 months and calculated an association index (AI) for each animal. Of the total of 53, 33 elephants formed 11 groups across both locations, ranging in size from two to six individuals per group. The average AI for elephants within groups was $0.517 \pm 0.039$. Many individuals preferred social isolation — 20 of the 53 elephants released were not associated with particular groups and had an average AI of $0.002 \pm 0.001$. Pairwise genetic relatedness in the groups was $0.078 \pm 0.019$ and $0.047 \pm 0.013$ in those animals not associated with groups. There was no correlation between pairwise genetic relatedness and AI for either the group-living elephants or those that lived alone. Thitram et al. found that social group bonding was not influenced by
genetic relatedness, but groups formed in association with the presence of a calf. They suggested that the chance of stable group formation in reintroduced elephants would be increased by including adults with calves.

11.5 Welfare concerns

Attitudes towards captive elephants have changed significantly over the past 40 years and there is no reason to think that this will not continue. Although some reports have suggested that animals — including elephants — do not suffer in circuses any more than in other captive environments (Kiley-Worthington, 1990b; Radford, 2007), nevertheless animal welfare organisations will continue to campaign against the use of ‘wild animals’ in circuses and keeping elephants in zoos.

In the United Kingdom, the Zoos Expert Committee — formerly the Zoo Forum — provides independent technical advice to the Government on zoo policy matters. In 2010 the Zoos Forum review of issues in elephant husbandry in UK zoos (Zoos Forum, 2010) considered the report of Harris et al. (2008) on elephant welfare in UK zoos and concluded that:

10. ... 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.

In effect the zoo community was put on notice that if it could not improve the welfare of zoo elephants, the UK Government would consider banning keeping elephants in zoos. At the time of the Zoo Forum’s report (2010) there were approximately 70 elephants in 13 UK zoos. The total number of elephants was unclear because the data presented for the individual zoos did not add up to the totals given for all zoos. It is not unknown for governments to intervene to protect elephants. In 2019 the Danish Government purchased the last four circus elephants in Denmark with the intention of retiring them to a sanctuary (BBC, 2019b).

11.6 Sanctuaries

It seems highly likely that the number of sanctuaries for captive elephants will increase as abused and elderly animals are ‘retired’ from logging camps, circuses and other captive situations and zoos continue to decide that a sanctuary is a better option for their elephants than a solitary or socially inadequate existence in a zoo enclosure.

The first elephant sanctuary to be created in Latin America was Santuario de Elefantes Brasil, which received its first two (Asian) elephants in 2016 (Anon., 2019d). Elephant Aid International is creating a new sanctuary in Georgia in the United States, Elephant Refuge North America (Anon., 2019e). In Europe there are ambitious plans to create the Elephant Haven European Elephant Sanctuary on land in the (Limousin) Nouvelle-Aquitaine Region, in the Department of Haute Vienne, France (Anon., 2019f). The site has an area of
28 hectares (over 70 acres) and there is the possibility of purchasing adjoining land in the future. The sanctuary plans to offer homes to elephants from circuses and zoos.

Professionally run sanctuaries in nonrange states are likely to provide a better home for most elephants than circuses or zoos with poor facilities. Ultimately they cannot have a role to play in the survival of elephant populations, but rather provide a sink for unwanted elephants.

Four Paws is an international animal charity that was founded in Austria in 1988 to campaign against fur farming and battery-farmed eggs. It has since extended its remit and is now involved with elephant welfare and conservation (Anon., 2018c). In Myanmar, logging restrictions and export bans have reduced the need for elephants to work in the teak industry, leaving around 1000 elephants ‘jobless’. Four Paws has constructed Elephant’s Lake, one of the largest elephant sanctuaries in Southeast Asia, to care for former logging elephants – along with orphaned and injured elephants – on 6880 acres (2784 hectares) of land in the Bagon region in Myanmar. The Ministry of Environmental Conservation and Forestry provided the land and Myanmar Timber Enterprise – a state-owned forestry organisation – is responsible for placing the elephants. The ultimate aim of this project is – where possible – to release rehabilitated elephants into the adjacent North Zar Ma Yi Forest Reserve.

11.7 A repository of useful genes

Elephants use their tusks for fighting, to dig for water and to remove bark from trees. The loss of tusks could alter the behaviour and distribution of wild African elephants. It is conceivable that captive populations of elephants could act as a repository of genes that are being lost from poached populations and that at some time in the future captive-bred elephants could help to redress the evolutionary changes caused to wild populations by poaching and other human pressures (Figs 11.1 and 11.2).

In some parts of Africa there has been an increase in the frequency of tuskless female elephants apparently as a result of increased poaching pressure. In poached populations in Tanzania more than 6% of adult females were found to be tuskless (Jones et al., 2018).

In a study of historical records (1989–96) of elephants randomly culled in Kruger National Park, South Africa, only 15 out of 735 females (2%) were tuskless and no males without tusks were found in the 605 bulls examined (Whyte and Hall-Martin, 2018). They suggested that the absence of one or both tusks was cause by accidental injury rather than genetic inheritance. Jachmann et al. (1995) found that the percentage of tuskless females in parts of Zambia’s Eastern Province increased from 10.5% in 1969 to 38.2% in 1989, apparently as a result of poaching. They noted that being tuskless appears to run in families and is sex-linked.

Whitehouse (2002) reported that 98% of the 174 females in South Africa’s Addo Elephant National Park were tuskless, but she suggested that this was largely the result of genetic drift caused by the population’s small size, isolation and genetic bottlenecks that occurred in the 1800s and 1920s.
FIGURE 11.1 A tusker in the forest around the rim of Ngorongoro Crater, Tanzania, c.2000. Bulls with tusks of this length are becoming increasingly rare in Africa due to poaching.

FIGURE 11.2 Mr Wilfred Foya from the College of African Wildlife Management (CAWM) in Moshi, Tanzania, holding a large tusk stored at the ranger station in Ngorongoro Crater, Tanzania.
In Asian elephants, tuskless bulls are rare, but in Sri Lanka 93% of adult and subadult bulls have been reported to be tuskless due to the selective hunting and capture of large bulls for the logging industry from an isolated population (Kurt et al., 1995).

## 11.8 Cloning

Can you imagine a world where large mammals are cloned for the tourist industry? Daniel Wright of the University of Central Lancashire, in the United Kingdom, can. He has suggested that cloning could provide animals for sport hunting and for ‘future safari zoos’ that would focus on education and conservation (Wright, 2018). Whether or not elephants could be part of this imagined future for zoos depends, of course, partly on suitable advances being made in cloning technology, but also on developments in elephant husbandry sufficient to satisfy the public, zoo professionals, animal welfare organisations and other stakeholders that their welfare in zoos could be assured.

Could Asian elephants one day be used to resurrect the woolly mammoth? The genome of the woolly mammoth (*Mammuthus primigenius*) was sequenced in 2008 (Miller et al., 2008). The Asian elephant is the ideal surrogate and egg donor for cloning a mammoth (Nicholls, 2008). It has been argued that it would be unethical to use Asian elephants for this purpose because of their endangered status (Pina-Aguilar et al., 2009). However, Cottrell et al. (2014) have noted that, once in existence, a cloned mammoth would be of even greater conservation concern:

> Once a mammoth is cloned, it will be the only one of its kind to become an endangered species immediately at birth, and legally will qualify for those protections allocated to other endangered species. We would be creating an endangered species from one that is not currently endangered (nor currently living), and we would need to protect and preserve it.

Realistically, cloning a mammoth would be a technically challenging and extremely expensive undertaking with no guarantee of success, so it seems highly unlikely that we will face the dilemma of having to justify keeping one proboscidean species in captivity to provide surrogates for its extinct relatives any time soon.

## 11.9 Elephants as therapy

Animal-assisted therapies have been used to improve the well-being of humans with a number of conditions, such as anxiety, depression, cerebral palsy and autism, by providing them with close physical contact with horses, dogs, dolphins and other species (Morrison, 2007). Improving human well-being is a relatively recent role for captive elephants.

The Thai Elephant-Assisted Therapy Project (TETP) was founded in 2007 and has the dual missions of assisting young people with autistic spectrum disorder and supporting the welfare and conservation of elephants in Thailand. The project is a collaboration between conservationists, occupational therapists and researchers at Chiang Mai University in northern Thailand.
In one study at the TETP, staff investigated the use of a captive Asian elephant as a therapy for a person with autism (Satiansukpong et al., 2008). A comparison of the participant’s performance before and after a treatment programme of 3 weeks showed an improvement in adaptive behaviour, sensory processing, postural control and balance.

In a second experiment, 16 children with Down’s syndrome from Kawila Anukul School, Chiangmai, participated in a study of the effects of elephant-assisted therapy in which the eight children in the control group continued to attend school while the experimental group of eight children attended school and therapy sessions twice a week for 2 months. These sessions consisted of feeding elephants, cleaning up food debris and dung, and mounting and dismounting an elephant after practising this on an artificial elephant. The children who received the therapy showed no significant improvement in balance or postural control, but a significant improvement in visual motor integration (VMI) was shown in this group (Satiansukpong et al., 2016). VMI is concerned with the ability to make sense of visual information and then use it appropriately for a motor task such as using a tool, writing, or playing sports.

11.10 Climate change

The global ecosystem is undergoing unprecedented change as a consequence of global warming and it is difficult to predict how this will affect the distribution and dynamics of elephant populations. An international multidisciplinary team of 26 experts in biodiversity conservation, climate change, macroecology and spatial modelling have predicted that increased climatic variability resulting from global warming will cause a range shift in elephants in South Asia and increase human–elephant conflict (Kanagaraj et al., 2019). They have predicted that around 42% of the approximately 256,500 km² of the habitat available at the time of their analysis will be lost by the end of the 21st century due to the combined effects of climate change and human pressure. They believe that changes in climatic water balance in monsoon areas will cause elephants to shift their range upwards along gradients of water availability and seasonal drought, and they emphasise the necessity to create wildlife corridors to facilitate this.

If climate change does cause distributional changes in elephant populations, this could cause far greater pressure on their numbers than they currently experience, especially if they move out of protected areas. Clearly, any large-scale changes could be used as a further justification for ex situ captive breeding projects.

11.11 A role for zoos?

Zoos face a dilemma. On the one hand some zoo populations cannot be sustained into the future without importing animals from the wild (Hutchins and Keele, 2006). On the other hand, some breeding programmes have achieved sufficient success that they have outgrown existing elephant accommodation and now face significant challenges in managing their elephants. Importation of wild elephants to zoos in nonrange states has almost ceased, preventing zoos from selecting the sex of their animals. Natural breeding
in zoos combined with artificial insemination has resulted in a more or less 1:1 ratio of male-to-female births. Taken together, these facts give rise to a predictable demographic certainty – the proportion of bulls in the population will increase with time. This will inevitably create significant financial and logistical challenges for ex situ breeding programmes because, historically, there has been no need for zoos to accommodate large numbers of bulls. Indeed, as discussed in Chapter 3, Elephant social structure, behaviour and complexity, in 1952 there were only six bull elephants in the United States among the 264 elephants of both genera kept in zoos and circuses (Lewis and Fish, 1978).

The management of Asian elephants in the European Association of Zoos and Aquaria Ex-situ Programme (EEP) has been reviewed by Schmidt and Kappelhof (2019) and their analysis exemplifies the challenges faced by successful elephant breeding programmes. Improvements in breeding within the EEP resulted in an increase in annual births to 15 in the 5 years between 2013 and 2017. In 1999 some 19.4% of Asian elephants in zoos were captive-born (Clubb and Mason, 2002), but at the time of their review, Schmidt and Kappelhof calculated that 60.4% of the EEP population had been born in captivity. Although not explicitly stated, we must assume they meant born in zoos, as opposed to logging camps, since they claimed this increase was a measure of the success of the EEP.

This increase in birth rate has produced a number of challenges for the EEP, the most urgent of which is the need to develop a strategy to deal with the growing number of bulls in the population. Schmidt and Kappelhof suggest a number of possible approaches (Fig. 11.3). Studbook data show that some female elephants in zoos have given birth at the age of 6 years. They suggest this should be extended to 8 years and that the interbirth (calving) interval should be 7 years. The combined effect of these two measures would be to reduce the reproductive rate and consequently reduce the rate at which bulls are added to the population. However, some zoos keep bulls more-or-less continuously with the rest of their herd and so cannot control mating. At Chester Zoo, Thi produced 9 calves between September 1993 and May 2018 – a calving interval of just 2.75 years, and 2.5 times the rate now being recommended (Fig. 6.18).

Schmidt and Kappelhof suggest that zoos need to develop a complex fission–fusion housing system similar to that used for Bornean orangutans (Pongo pygmaeus) to allow group composition to be easily changed (Amrein et al., 2014). This would allow bulls to remain in their natal herd until sexual maturity as they do in the wild. It would also facilitate the association of bull calves with older bulls, which may be important in the development of normal sexual behaviour (Rees, 2004b). Even if zoos are able to develop the type of elephant accommodation envisaged here there would still be a need for additional sites that could accommodate around 30 bulls based on current predictions for population growth.

In addition to the expensive option of adapting existing accommodation and building new bull facilities, Schmidt and Kappelhof have also discussed the option of using contraception to reduce population growth – although this could increase acyclicity in the population if reversibility proved to be problematic – and even posited ‘management euthanasia’ as a possibility, while acknowledging that the latter would be unacceptable to the public. While zoos have a ‘surplus’ of bull Asian elephants, some wild populations
have a sex ratio of bulls to cows as low as 1:100 as a result of poaching, because most cows bear no tusks (Sukumar, 2003). Captive-born bulls could be translocated to these populations, but this would effectively be using wild populations as a sink for surplus zoo animals and an unethical use of translocation as a conservation tool.

As we have already seen, some zoos have decided that keeping elephants is no longer an option and it is clear that even zoos that have a long history of keeping elephants may decide that these animals are no longer part of their future.

Twycross Zoo in the United Kingdom illustrates the transient nature of the role of some zoos in the captive breeding of elephants. The zoo opened on 26 May 1963 and kept Asian elephants under human care.
elephants from 1964. It imported *Noorjahan* from Jaldapara Wildlife Sanctuary in India in 1998 at the age of around 2.5 years. In 2014, at 18 years old, she gave birth to a calf conceived by artificial insemination. Another artificial insemination conception in a different cow resulted in a stillbirth. In 2010 and 2014 the elephant enclosure was improved. In 2018 the zoo decided to transfer its four elephants to a new facility at Blackpool Zoo, United Kingdom, permanently citing the following explanation (Anon., 2018d):

*Twycross Zoo’s all-female elephant herd are leaving for a new home. Their new home will be at Blackpool Zoo and will allow the herd to breed naturally with a bull elephant. This will ensure the long-term survival of this beautiful, endangered species.*

*Although our facilities are amongst the best in the world, and are suited to house an all-female herd, we cannot accommodate an adult male elephant. Elephants are highly social creatures and the latest research has shown us that having a bull in their herd mix is vital for their well-being.*

The statement that this move will ‘ensure the long-term survival of this beautiful, endangered species’ is disingenuous as there is no scientific evidence that the future survival of elephants depends upon zoos. Furthermore, wild Asian elephants live in groups consisting of adult cows and their calves with no permanent adult bull members. There is no evidence that the absence of an adult bull in a zoo elephant group seriously compromises the animals’ welfare. It does, of course, prevent natural breeding and may inhibit the development of natural sexual behaviour in juveniles (Rees, 2004b). Also, there is some concern that keeping adult bulls permanently within a herd is producing — in some zoos — the short calving intervals that are helping to increase the bull population at a rate that the Asian elephant EEP cannot currently accommodate (Schmidt and Kappelhof, 2019).

In the long term, zoos may take a more pragmatic view of their potential to return endangered species to the wild. In May 2019, Barcelona Zoo, in Spain, announced that it would no longer breed most of the species it was keeping at the time, including elephants (Fig. 11.4). Against a backdrop of increasing public concern for animal welfare, the city council amended its animal protection ordinance, prohibiting breeding programmes for species that cannot later be released back into their natural habitat (Congostrina, 2019). If other zoos take this view, or if governments accede to the wishes of the animal welfare lobbies, we may see an end to the keeping of elephants in zoos, and a consequent end to the associated breeding programmes, within a relatively short time scale.

### 11.12 Consumptive use or intensive protection zones?

The future for elephants is uncertain, but the evidence of history is that states make extraordinary efforts to protect their wildlife when its future is seriously threatened. Some countries are using paramilitary personnel and tactics to protect elephants and other big game species. Indeed, in the 1990s the Director of the Kenya Wildlife Service, Dr Richard Leakey equipped and trained his field staff in a paramilitary fashion to facilitate the protection of elephants and other wildlife (Leakey and Morell, 2001).
The alternative to captive breeding within elephants’ range states is to establish intensive protection zones (IPZs) similar to those created in Zimbabwe (Kock et al., 1996) and Kruger National Park in South Africa for black rhinoceroses (*Diceros bicornis*). IPZs may be equipped with high-tech antipoaching equipment such as gun-fire detection systems and movement detectors that warn wildlife authorities about illegal activities.

The protection of elephants and other wildlife must be dramatically improved by professionalising protected area management. *African Parks* is a nonprofit organisation that works with governments and local communities to provide rehabilitation and long-term management of protected areas in several African countries. It takes direct responsibility for these areas and has had some remarkable successes. In 2017 *African Parks* completed the largest elephant translocation in history when it moved 520 elephants from Liwonde National Park and Majete Wildlife Reserve in Malawi to restock the depleted population in Nkhotakota Wildlife Reserve after improving the reserve’s security (Anon., 2018e).

Elsewhere in Africa, for example Zimbabwe, sport hunting of elephants gives them an economic value and can help provide an income to rural communities, while giving the indigenous population a reason to protect them from poachers (Bond, 1994; Frost and Bond, 2008).

In elephant range states it is common to find that rich people in urban areas value elephants while poor farmers see them as a threat to their livelihoods and treat them as pests. Exploiting the willingness of urban dwellers to pay for elephant conservation can help to fund measures to mitigate human–elephant conflict (Bandara and Tisdell, 2004; Neupane et al., 2017). In addition, a permanent and comprehensive ban on the sale of ivory would be beneficial; for example China and the United States have recently put an end to their domestic ivory trade (Harvey et al., 2017).

![African elephants at Barcelona Zoo, Spain, in 2019.](image)
11.13 The court of public opinion

In 2016 the tour operator Thomas Cook stopped promoting holidays that involved elephant rides and shows as a result of receiving a petition signed by almost 175,000 people organised by World Animal Protection (Anon., 2016d). In July 2018 the company decided to stop selling tickets to SeaWorld in the United States and Loro Parque in Tenerife because of concerns about the welfare of the captive killer whales (*Orcinus orca*) held by these organisations (Haslam, 2018). In 2017 the company sold 10,000 SeaWorld tickets at £100 (US$130) each; a total of £1 million (US$1.3 million).

It is not inconceivable that in the near future zoos of all types will have to adjust their operations to accommodate a greater public understanding of, and concern for, animal welfare and this could mean the end of elephants in zoos just as it has meant the end of elephants (and other nondomesticated animals) in circuses in many countries. Animal welfare is no longer the sole concern of activists dressed in balaclavas wielding baseball bats. It is an academic subject taught in universities based on a set of principles acknowledged by legislators, and a legal specialism practised by lawyers — it is a concern of ordinary people when they buy their food and clothing, and book their vacations.

If the public stops visiting zoos with elephants and tourists stop travelling to resorts offering elephant rides the fate of many captive elephants may be sealed by the court of public opinion. Scientists lack the tools to measure welfare precisely but that may not matter. Perception is everything and if the public perceives the keeping of elephants in captivity to be wrong that will be enough.

There is no convincing evidence that captive elephants play a significant role in elephant conservation. Wildlife biologists who spend their time studying wild elephants rarely if ever refer to any beneficial role of captive elephants in conservation in their scientific papers or textbooks; indeed, many have actively spoken out against zoos and the recent importation of elephants from the wild to zoos. They include Joyce Poole, Iain Douglas-Hamilton, Beth Archie, Harvey Croze, Phyllis Lee and Cynthia Moss (Poole, 2010).

11.14 Predictions

The future of captive elephants is uncertain. Scientists are developing methods of improving captive breeding in zoos as politicians ban, or threaten to ban, zoos from keeping them. Zoos — or at least some zoos — claim a conservation benefit from keeping elephants while other zoos release them to sanctuaries that will not breed them. Working elephants in Asia are redeployed to the tourist industry — amid ethical and welfare concerns — while others are used to provide therapy for autistic children. Many of these developments were not predicted 25 years ago and, no doubt, 25 years from now there will be other unpredicted developments in the fate of elephants under human care.

My predictions are as follows:

1. Little evidence will be published that elephants living in zoos have an educational role that benefits elephant conservation.

2. Elephants in Europe and North America will be kept in fewer, but larger, groups compared with today and bachelor herds will be maintained in some facilities.
3. Elephant ranching on the scale envisaged by Eltringham (1984) will not happen.

4. The range states of the Asian elephant will establish captive breeding herds from the redundant elephants formerly employed in logging and use these as a source of animals to release into the wild.

5. The range states of elephants will create special protection areas for wild herds and translocate animals to them in social groups.

6. Animal welfare organisations will continue to use the courts to apply pressure on zoos and circuses to release elephants to sanctuaries and prevent the importation of elephants from their range states to zoos in nonrange states.

7. Circus elephants will not exist or will be very rare as a result of legal bans on the keeping of exotic animals by circuses.

8. The courts will not acknowledge an elephant as having a legal personality and thereby deprive elephants of basic rights beyond those available under animal welfare laws.

9. Fewer small children will be able to see, smell and hear an elephant at close quarters in a zoo.

Although this book was intended to consider only those studies made of elephants under human care in zoos, circuses, logging camps and other situations where humans exert direct control over them, it is clear that all of the Earth’s wild elephant populations are very much ‘under human care’ by virtue of the fact that, to a very large extent, humans determine their ultimate fate.

In a perfect world, where elephants are not hunted for their ivory or captured for entertainment, exploited for our amusement, our religious ceremonies, as forestry workers or confined in inappropriately small and barren enclosures, we should need only to exert the minimum of human influence on them. But because human attitudes towards elephants vary between and within cultures and because experts disagree about how best to secure the future of the Earth’s elephant populations, it is impossible to predict the ultimate fate of elephants living under human care with any confidence.

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**Postscript**

As this book goes to print zoos around the world are reopening after many weeks of closure following a novel coronavirus pandemic (COVID-19) in the human population. This has brought many zoos to the brink of financial failure and most have launched public appeals for donations including Berlin Zoo, Chester Zoo, ZSL Whipsnade Zoo, Taronga Zoo, San Diego Zoo Safari Park and the Smithsonian’s National Zoo, all of which keep elephants.

These events should act as a stark reminder that the financial future of zoos cannot be guaranteed. If they disappear, so too will most, if not all, of the captive breeding programmes for elephants. It is clear that the future survival of these species, and many others, should not be left to institutions as financially fragile as zoos and if breeding programmes are considered essential for their survival they should be funded by governments.