



भारतीय वन्यजीव संस्थान
Wildlife Institute of India

TRUMPET

QUARTERLY JOURNAL

VOLUME IV ISSUE 03

JANUARY 2025



PROJECT ELEPHANT

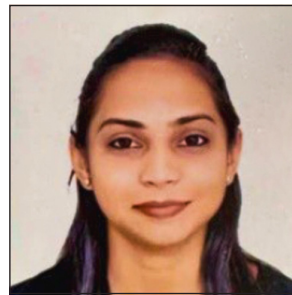
MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE

Ensuring the Well-Being of Elephants at Vantara's Radhe Krishna Temple Elephant Welfare Trust:

A Comprehensive Approach to Ethical Care



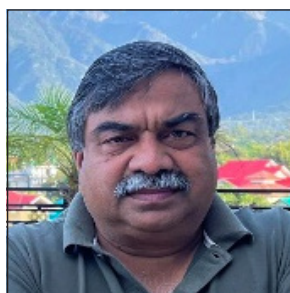
Yaduraj Khadpekar¹



Kunj Joshi²



Prudhvi R Guntur³



Brij Kishor Gupta⁴



Vivaan Karani⁵

¹ Veterinary Officer, Radhe Krishna Temple Elephant Welfare Trust

² Biologist, Radhe Krishna Temple Elephant Welfare Trust

³ Compliance Officer, Greens Zoological Rescue and Rehabilitation Centre Society

⁴ Member Secretary, Greens Zoological Rescue and Rehabilitation Centre Society

⁵ Chief Executive Officer, Greens Zoological Rescue and Rehabilitation Centre Society

Address for Correspondence: SSO, A-5, Village Moti Khavdi, Jamnagar 361 142, Gujarat,

Email: gzrrc@outlook.com

Abstract

The Vantara's Radhe Krishna Temple Elephant Welfare Trust (RKTEWT), Jamnagar, is dedicated to the comprehensive captive care of elephants in India, addressing both their physical and psychological well-being. This paper presents an overview of the welfare practices implemented at RKTEWT, which encompass advanced husbandry techniques, medical care, and enrichment programs tailored to meet the specific needs of each elephant. This approach is grounded in scientific research and traditional knowledge, aiming to provide a holistic environment that promotes natural behaviours and social structures. Key components of the welfare strategy of captive elephants at RKTEWT include meticulous health monitoring, innovative nutritional plans, and specialized care for elephants in musth. Additionally, RKTEWT emphasizes the importance of continuous training and development of mahouts, fostering a deep understanding and respect for elephant behaviour and welfare. By integrating modern veterinary practices with cultural traditions, RKTEWT has established a model for elephant care that can be replicated in other conservation efforts. Through this comprehensive welfare program, RKTEWT aims to contribute to the global initiatives in conserving this endangered species and enhancing their quality of life.

Keywords: Elephant, Captivity, Welfare, Musth, Mahouts.

Introduction: Understanding the Context of Captive Elephant Welfare

In Asia, particularly in South Asia, captive elephants have been associated with humans for millennia, symbolizing wisdom, strength, and reverence. Captive Asian elephants in South Asia are used for many purposes in Asia, including logging, cultural and ceremonial purposes, public exhibitions, tourism, and transportation (Menon and Tiwari, 2019). Recent estimates put the current number of captive Asian elephants in range countries at 14,000 to 16,000, of which 3,400 to 3,700 are in India (AsERSM, 2022). In recent years, there has been a global shift towards a more ethical and humane treatment of animals that recognizes their intrinsic value. This shift has been driven by advances in scientific understanding, changing public perceptions, and a growing awareness of the importance of animal welfare. Many countries, including India, have husbandry guidelines for keeping and caring for elephants in captivity that take animal welfare into account. The

welfare of elephants in captivity is assessed based on their physiological functions (e.g., health, reproduction, stress) and behavioural characteristics. However, recent studies in India have shown that the welfare of most captive elephants was poor (Varma et al., 2011). Health assessments in captive elephants to evaluate welfare include measures of body condition, foot health, and reproductive cycle activity (Lewis et al., 2010; Brown et al., 2016; Miller et al., 2016; Morfeld et al., 2016). Studies assessing the health of elephants in captivity have found that many elephants have significant health problems, ranging from body and skin conditions to foot health, eye problems, edema, and wounds (Ramanathan and Mallapur, 2008). Due to poor nutrition and husbandry practices, many elephants in captivity suffer from obesity or arthritis (Sirikaew et al., 2019). Elephants in captivity should be kept in conditions that allow them to express their natural behaviours. Stereotypic behaviours (repetitive patterns of behaviour) are the most common welfare-related behaviours in captive elephants and have been linked to chaining, lack of space, and social isolation (Greco et al., 2016; Varadharajan et al., 2016). Musth in adult male elephants is characterised by high testosterone levels and increased aggression, making them difficult to control in captivity. Poor management practices often result in elephants being starved to force them out of musth, negatively impacting their welfare and living conditions. Short tethering, social isolation, and a lack of fresh food and clean water lead to increased frustration and aggression (Brown et al., 2020).

Expressions such as play behaviour, alertness and responsiveness, relaxed boot movements, tail wagging, vocalisations and rhythmic ear flapping are associated with positive well-being in captive elephants (Lee and Moss, 2014). Studies have shown that good welfare of captive elephants is associated with a diverse and enriched captive environment, exercise opportunities, diverse feeding, housing in compatible social groups, natural substrates, and good relationships between elephants and caretakers (Brown et al., 2016; Morfeld et al., 2016; Holdgate et al., 2016). Considering best welfare practices, elephants in captivity require socialization (by humans and conspecifics), appropriate nutrition and feeding practices, freedom of movement, mental stimulation, and good veterinary care (Brown et al., 2020). The diet of Asian elephants in the wild includes a wide range of food plants with different nutrient compositions (Vanitha et al., 2008). In captivity, they are often not fed as they would be in the wild. Due to the restricted diet, many elephants in captivity suffer from nutritional deficiencies and metabolic diseases. Nutritional management with proper supplementation of minerals and vitamins protects the animals not only from metabolic disorders but also from infectious diseases (Dhairykar and Singh, 2020).

Training elephants in captivity usually involves harsh methods that are mainly associated with negative reinforcement. With positive reinforcement instead of negative reinforcement, elephants can learn commands faster. Elephants kept with positive reinforcement may be less anxious or fearful during training, contributing to a more cooperative relationship between staff and animal (Kane et al., 2005). The welfare of captive elephants is directly linked to the welfare of their mahouts, as a positive human-animal relationship is crucial for animal welfare (Carlstead et al., 2019). The mahouts' expertise accumulated over many generations is of great importance when dealing with elephants in captivity. Frequent changes of mahouts and mahouts with little experience in this profession can increase the stress of the animals and the risk of injury. In addition, studies have found that traditional family ties to the profession are declining, and many mahouts today have little experience in handling captive elephants (Mumby, 2019). The tradition of mahout ship is on the wane in India (Lair, 1997; Hart and Sundar, 2000; Varma et al., 2010; Radhakrishnan et al., 2011). There is a need to teach mahouts humane methods of training elephants that focus on the idea of positive reinforcement.

Elephants kept in captivity in India can be broadly divided into the following categories: Zoo elephants, which are housed in zoos; Temple elephants, which are owned by temples and used for religious activities; Forest Department elephants, which are kept in elephant camps run and managed by state forest departments and used for patrolling, human-wildlife conflict resolution, conservation and wildlife research activities; privately owned elephants owned by individuals, companies or organisations and used for various purposes such as religious activities or entertainment rides; and rescued elephants housed in rescue facilities across India, including elephants rescued from captivity or the wild and cared for and rehabilitated in captivity. As far as the welfare of captive elephants is concerned, the intensity and number of problems faced by these elephants depend on which of these categories the elephants are kept in. Elephants in some categories are unfortunately in a worse condition than others. Considering the welfare of captive elephants in India, Project Elephant has issued 'Guidelines for the Care and Management of Captive Elephants (2008)' under the aegis of the Ministry of Environment, Forest, and Climate Change (MoEFCC). Similar guidelines from various states and statutory bodies followed, including the Kerala Captive Elephants (Management and Maintenance) Rules, 2003; the Tamil Nadu Captive Elephant (Management and Maintenance) Rules, 2011; the Gujarat Captive Elephant (Management and Maintenance) Rules, 2024, the Central Zoo Authority Recommended Guidelines for "Elephants Upkeep in Zoos" 2013; and more recently, the Captive

Elephant (Transfer or Transport) Rules, 2024. To a certain extent, elephant camps and zoos run by state forest departments and central governments in India adhere to these rules and regulations. A study on the overall welfare of privately owned elephants found deviations of 50% or more from the prescribed norms (Varma, 2010).

Physical health and healthcare

Many captive elephants, especially the working elephants, suffer from a spectrum of chronic health conditions. The most common ones are unhealing wounds and abscesses, foot injuries, eye and vision problems, and joint problems. In many cases, an experienced veterinarian is not available to routinely examine and treat these conditions, which results in worsening of these conditions and discomfort of the elephant.

New and inexperienced mahouts (elephant handlers) many times tend to overuse negative reinforcements using the equipment that may cause injury and wounds to the elephant where the equipment has been applied. Most common sites are behind the ears and on the legs, where the elephants frequently get poked with the sharp objects. Use of spiked hobbles on the legs is another common reason for the wound on the legs. This is very common in the case of male elephants when they come in musth. At most places, bulls in musth are restrained by 3 to 4 legs with heavy chains for the entire musth period, which can be as long as 3 to 4 months. During this period, it is very difficult to approach the elephant for cleaning or even feeding and watering. However, this causes infections in the foot pads due to constant exposure to unhygienic substrate. If there are already existing foot pad or toenail injuries, they tend to get worse during this period as regular medical attention and dressing is not possible due to the aggressive behaviour of the male. If the elephant is restrained for such a long period on a hard surface like a concrete floor, that also takes a toll on the weight-bearing joints of the legs. Lack of exercise during musth adds to this joint problem. In many cases, due to constant pulling by the elephant, the heavy chains put on the legs get embedded into skin, or even underlying tissues, causing severe painful wounds on the legs (Img. 1).

Joint problems are very common in elephants that are kept on the hard surfaces most of the time and do not have the freedom to move around, thus not getting the necessary exercise for the joints. Also, the elephants used for the activities that required walking on hard surfaces like stone paths or tar roads for long durations and long distances are more prone to developing joint inflammations (Img. 2). Nutrition also plays a very important role in avoiding and controlling the arthritic conditions. Captive elephants, due to



Image 1. Infectious tethering wounds on the hind legs

lack of optimum exercise, are more prone to obesity and thus joint problems. Improper diet and nutrition result in the imbalance in the essential nutrients that are required for the maintenance of bones and joints.

Many elephants are restrained on the hard floor and are made to sit or lie down frequently for different works. Such elephants, over the years, develop chronic inflammation with swellings on the pressure points, such as the elbows, hip area, or the temporal area of the head. These swellings might not be painful for some time, but if the constant hard floor impact and irritation continue, they may develop into inflammatory edema or abscess. In that case, it becomes painful and



Image 2. Severe swelling of hind foot of an elephant

uncomfortable for the elephant to sit or lie down. If such swelling is on one side of the body, the elephant starts preferring or putting more weight on the other side while sitting or lying down, which eventually causes a similar condition on the other side as well.

All elephants with joint problems absolutely require access to a water body. It works as hydrotherapy by taking the weight off from the inflamed joints due to buoyancy and providing the necessary rest to the joints. All such elephants must be given daily access to water bodies for a few hours, where they can relax their painful joints. Many elephants with arthritis are unable to lie down to rest due to joint pain and due to the fear of not being able to get up again. Such elephants sleep only in a standing position for months or even years. This gradually worsens the joint inflammation. These elephants should be provided with a support structure for them to lean against while sleeping. Even if this is provided, there is no alternative for the hydrotherapy. In captive situations, these requirements of arthritic elephants are not met in many cases.

Zoonotic diseases are another important concern in captive elephants. Most importantly, transmission of Tuberculosis (TB) from people to elephants. Captive elephants, due to their frequent contact with humans, especially mahouts, are more prone to “reverse zoonosis” of TB from people to them (Lainé 2018). These infected elephants, in turn, may transmit the disease to other people. In most captive situations, this aspect of the healthcare and husbandry management remains neglected. The elephants are not tested or screened for TB. As the infection may be present in the elephant in a latent form, there is always a chance that it may flare up when the immunity levels go down due to any reason. The disease may cause weakness and eventually death in elephants.

Prophylactic healthcare is severely lacking for many elephants in captivity. This might be due to difficulty in regular and necessary access to experienced veterinarians. Prophylactic measures like deworming and vaccinations are not properly followed. Even if it is done sporadically, proper medical records are not generally maintained. This makes it difficult for the veterinarians to know the health history and carry out proper holistic treatment when required.

Psychological health

Many captive elephants, especially working elephants, suffer from a spectrum of chronic health conditions. Among the most common are non-healing wounds and abscesses, foot injuries, eye and vision problems, and joint problems. In many cases, no experienced veterinarian is available to routinely examine and treat these conditions, resulting in the exacerbation of these diseases and the malaise of the elephants.

New and inexperienced mahouts (elephant handlers) often tend to overdo negative reinforcement with the equipment, which can result in injury and wounds to the elephant where the equipment has been used. The most common places are behind the ears and on the legs, where the elephants are often pricked with the sharp objects. The use of spiked hobbles on the legs is another common cause of leg wounds. This is particularly common in male elephants when they are in moult. In most places, bulls are shackled with heavy chains on 3 to 4 legs throughout the musth period, which can last 3 to 4 months. During this time, it is very difficult to approach the elephant to clean it or even feed and water it. However, this leads to infections in the footpads as they are constantly exposed to unhygienic substrate. If there are already injuries on the footpads or toenails, they worsen during this time as regular medical care and bandaging are not possible due to the male's aggressive behaviour. If the elephant is kept on a hard surface such as a concrete floor for such a long period of time, this also puts strain on the joints of the legs, which bear the weight. The lack of movement during musth exacerbates this joint problem. In many cases, the heavy chains attached to the legs penetrate the skin or even the underlying tissue due to the constant pulling of the elephant, causing severe, painful wounds on the legs (Img. 1).

Joint problems are very common in elephants that are kept on hard surfaces most of the time and cannot move freely, so the joints are not sufficiently exercised. In addition, elephants used for activities that require them to walk for long periods of time and over long distances on hard surfaces such as stone paths or tarred roads are more prone to joint inflammation (Img. 2). Diet also plays an important role in the prevention and control of arthritic diseases. Elephants in captivity are more prone to obesity and thus joint problems due to the lack of optimal exercise. A poor diet leads to an imbalance in the essential nutrients needed to maintain bones and joints.

Many elephants are confined to the hard ground and have to sit or lie down frequently for various tasks. Over the years, such elephants develop chronic inflammation with swelling in pressure points such as the elbows, the hip area, or the temple area of the head. These swellings

may not be painful for a while, but if the constant hard ground impact and irritation persist, they may develop into inflammatory edema or abscess. In this case, it becomes painful and uncomfortable for the elephant to sit or lie down. If such swelling occurs on one side of the body, the elephant will begin to favour or put more weight on the other side when sitting or lying down, eventually leading to a similar condition on the other side as well.

All elephants with joint problems absolutely need access to a body of water. It acts as hydrotherapy by relieving the inflamed joints through buoyancy and giving the joints the rest they need. All of these elephants need to be given access to a body of water for a few hours every day where they can relax their aching joints. Many elephants with arthritis are unable to lie down to rest because of the joint pain and fear of not being able to get up. Such elephants sleep standing up for months or even years. This gradually worsens the joint inflammation. These elephants should be provided with a support structure to lean on while sleeping. Even if this is the case, there is no alternative for hydrotherapy. In captivity, these requirements are not met by arthritic elephants in many cases.

Zoonotic diseases are another important problem in captive elephants. Most important is the transmission of tuberculosis (TB) from humans to elephants. Captive elephants are more susceptible to "reverse zoonosis" of TB from humans to them due to their frequent contact with humans, especially mahouts (Lainé 2018). These infected elephants can in turn transmit the disease to other humans. In most cases, this aspect of captive health and husbandry management is neglected. The elephants are neither tested nor screened for tuberculosis. Since the infection may be latent in the elephant, there is always a possibility of an outbreak if immunity wanes for any reason. The disease can lead to weakness and eventually death in elephants. Many elephants in captivity lack prophylactic health care. This may be because it is difficult to get regular access to experienced veterinarians. Prophylactic measures such as deworming and vaccinations are not carried out properly. Even when they are carried out sporadically, proper medical records are generally not kept. This makes it difficult for veterinarians to know the health history and provide appropriate holistic treatment when needed.

Radhe Krishna Temple Elephant Welfare Trust (RKTEWT): Redefining Captive Elephant Welfare

The Radhe Krishna Temple Elephant Welfare Trust (RKTEWT) attaches great importance to the welfare of elephants in captivity. In line with modern ethical standards, the RKTEWT is committed to improving the care of elephants through contemporary practices. The manuscript “Ensuring the Welfare of Elephants at Radhe Krishna Temple Elephant Welfare Trust: A Comprehensive Approach to Ethical Care” describes the Trust’s commitment to high standards of care. It details the efforts to incorporate contemporary principles of animal welfare into daily routines and operations. The article takes a comprehensive look at aspects of physical health and health management as well as the mental health of the captive elephants at RKTEWT. A transformative journey has been undertaken to modernize practices to ensure alignment with current ethical standards and best practices in animal welfare. Continuous learning and adaptation are at the heart of this commitment. Protocols are regularly reviewed and updated based on the latest research and feedback from experts. By sharing knowledge and experiences, RKTEWT aims to encourage the adoption of similar practices and contribute to improved conservation of captive elephants in India and elsewhere. This manuscript serves both as a record of current practices and as a dynamic document reflecting continuous learning and growth. It is intended as a valuable resource for organizations, researchers, and individuals working for the welfare of these remarkable animals.

Transformative approaches to physical health and proactive healthcare

In the RKTEWT, elephants are admitted from a variety of backgrounds and with many of the health problems mentioned above. A flow chart explains the process of how the elephants arrive at the RKTEWT (Fig. 8). In order to provide the elephants with the best possible medical care and welfare, the facility has created a specialised infrastructure that can best meet their needs. The RKTEWT has the largest elephant hospital in the world with advanced equipment and technology, including a hydraulic height-adjustable operating table, an endoscopy unit, a laser lithotripsy unit, special anaesthesia equipment for the elephants, and other regular equipment such as portable X-ray and ultrasound machines. The hospital is equipped to perform intensive surgery on an emergency basis. The

team has already successfully performed life-saving surgeries at the hospital, including a tumour removal from the urinary tract and the removal of a urinary bladder stone with laser lithotripsy. Cataract surgery has also been successfully performed at the hospital.

RKTEWT has 40 hydrotherapy pools spread across many areas of the facility to provide relief to elephants with arthritis, joint pain, and foot problems. This includes a temperature-controlled Jacuzzi pool equipped with high-pressure jets that create hydrostatic pressure. This pressure serves as a therapeutic massage for the muscles, joints, and the entire body and promotes blood circulation. Hydrotherapy plays a crucial role in relieving chronic muscle discomfort in elephants suffering from the challenges of arthritic conditions. Water resistance is invaluable for strengthening muscles and cardiovascular exercise, as it can effectively reduce edema and swelling. It is particularly beneficial for elephants in captivity who are often plagued by arthritis and foot problems. All elephants in the facility are given loose earth or sand mounds to sleep on. This gives them the support they need to stand up and serves as enrichment, as the elephants love to rub against these mounds.

The captive environment, characterized by poor nutrition and little space, puts elephants at risk of arthritis, which is exacerbated by movement on uneven surfaces that are unsuitable for their sensitive feet. In addition, these animals often suffer from painful sores and abscesses on their feet. The buoyancy of the water in these hydrotherapy sessions offers them respite by easing the burden on their feet and promoting relaxation in the large pool. Many of the elephants cared for by RKTEWT have been rescued from difficult circumstances. Some were privately owned and exploited as beggars; others spent their lives in captivity and confinement as temple elephants or were forced to perform in circuses. Such elephants in captivity are often forced to move in environments that are unsuitable for their anatomy, leading to premature onset of arthritis. In addition, the lack of proper foot care leads to overgrown toenails and cracked cuticles. As a result, standing and walking become torture for these majestic creatures. Hours of walking on scorching, tarred roads have taken their toll on the sensitive soles of their feet. This special treatment not only provides relief for the elephants but also serves as a model for the management of elephants in captivity worldwide.

For elephants, maintaining good health begins with healthy feet. The undersides of elephants’ feet are made of a cushioning material that serves as a natural support system, much like a sturdy shoe. In captive elephants, foot health is the biggest problem and the most important disease they face. Factors such as inactivity, suboptimal postural practices, and prolonged contact with

unnaturally hard surfaces such as pavement, compacted dirt, and concrete can lead to thin, uneven, and bruised foot pads as well as cracked nails. This can lead to irreversible damage to the nail bed, ultimately resulting in lameness. These diseases are common in captive elephants and sometimes lead to severe and irreversible health problems that require removal of the infected toe bone. Therefore, comprehensive foot care is an essential part of any captive elephant's health care programme.

RKTEWT prioritises regular care of elephants' feet as an integral part of husbandry practices. Foot care for captive elephants at RKTEWT commences with granting them self-directed access to appropriate and uncontaminated substrates such as grass, natural soils, and diverse vegetation. These natural surfaces promote the natural wear and conditioning of feet, cuticles, and nails as elephants engage in their typical foraging activities. Daily inspections of elephants' feet are a routine practice, carried out while the elephants are lying on their sides. Additionally, staff always monitor elephant movement and behaviour to detect signs of lameness, which can indicate foot pain or injury. During these foot care inspections, elephants are

thoroughly examined for injuries and common foot disorders. To support overall health and prevent infection, lameness, and osteomyelitis (a bone disease), all elephants receive pedicures on a monthly basis. This process involves trimming foot pads and nails to eliminate necrotic tissue that may pose a threat to the animals. Overgrown nails are also removed to prevent them from cracking, splitting, and becoming infected. Mahouts are trained to use specialized sterile tools to work with the foot pads carefully. These tools include a large knife for removing pads and trimming nails, a small blade for addressing infected areas, and a rasp for fine-tuning the nails.

In addition to maintaining the grooves of the elephants' foot pads, the care team takes care of clipping their nails using a large rasp to keep them in optimal health. All these activities are made possible through a positive reinforcement training programme, which enables the elephants to willingly participate in their own care. Consistent cleaning and trimming of the feet of elephants ensures their continued health and prevents potential issues that might arise in the absence of regular foot care.

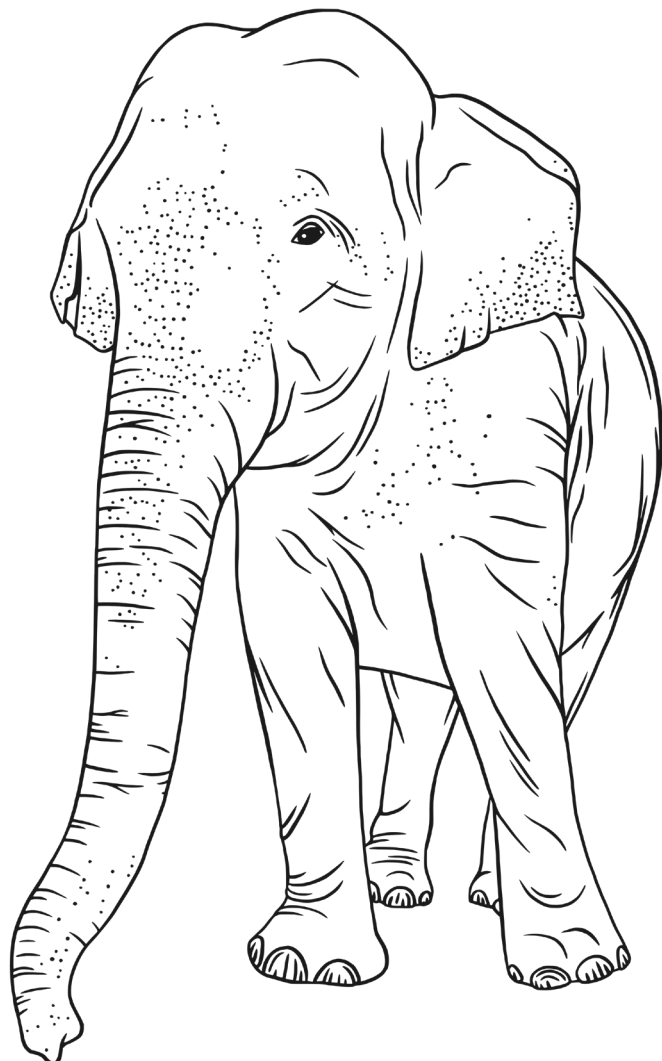




Photo credit: Shashank N

Revolutionizing nutritional management for optimal health

Caring for the nutritional needs of captive elephants is a paramount aspect of ensuring their well-being in captivity. Different elephants have varying nutritional requirements, depending on their general health and individual needs. With a population of over 200 captive elephants, the task of consistently providing them with nourishment is quite demanding. To meet this challenge, RKTEWT boasts a world-class elephant kitchen equipped with state-of-the-art facilities. Much like a top-tier restaurant, the elephant kitchen's day commences before sunrise, as trucks deliver a variety of essential items, including hay, sugarcane, fresh fruits, vegetables, and vital nutritional supplements. Within the expansive kitchen, spanning several thousand square feet, skilled chefs meticulously craft special diets and enrichment items tailored to each elephant's specific dietary guidelines, as directed by nutritionists.

The nutrition programme at RKTEWT comprises a nutrition laboratory and a centralized diet kitchen, working in harmony to ensure the adequacy and safety of the elephants' diets. The nutrition laboratory continuously monitors and assesses the diets for various nutrients, thereby ensuring the optimal health of elephants. Diets are meticulously designed and formulated based on the health history of each individual, taking into account their unique digestive anatomy and physiology. Within the nutrition laboratory, a dedicated team of nutritionists produces daily elephant diets, making it a leader in elephant nutrition research on a global scale. Equipped with cutting-edge analytical instruments, the lab measures specific nutrients, including water content, protein, fat, fatty acids, and dietary fibre. Regular monitoring of the nutritional quality of the elephants' diets allows us to make necessary adjustments based on analytical findings.

Feeding elephants at RKTEWT is a year-round commitment, and dedicated diet kitchen staff are responsible for procuring and managing all the ingredients required for the animals' diets. This includes a wide range of feed ingredients such as alfalfa hay, fodder, vegetables, fruits, dietary supplements, and more, all of which are carefully measured and prepared daily to cater to each animal's specific dietary needs. Improvements in the nutritional status of elephants have a direct impact on their overall health and longevity. Additionally, advances in nutrition research provide us with valuable tools to effectively manage their well-being and enhance their chances of survival. Maintaining cleanliness is of utmost importance throughout the process, with all fruits and vegetables undergoing thorough washing.

For elderly elephants or those with dental issues or health concerns, specially prepared food tailored to their nutritional requirements is provided. Feeding time is a critical juncture when caregivers and the veterinary team discuss the elephants' response to medications and the need to continue prescribed courses of treatment.

The team at RKTEWT actively encourages and works on the socialisation of the elephants depending on their ages and compatibility. The facility has managed to socialise the elephants into stable herds as big as 12 elephants. As mentioned above, this socialisation has a big impact on improving the psychological welfare of the elephants, as they get the opportunity to be in a social environment and structure as close as possible to the wild. This reduces the stereotypies and allows the elephants to exhibit natural behaviour.

Humane and safe management of Musth

Musth, pronounced as "must," represents an annual hormonal cycle naturally occurring in adult male bull elephants. This cycle can persist for a few days or extend for several months. During musth, male elephants undergo significant physical and behavioural changes, characterized by a surge in testosterone levels, heightened aggression, the secretion of temporin, a hormone-rich substance, from glands on either side of their heads, and a continuous dribble of urine down their hind legs. Given that a bull Asian elephant can weigh over 6,000 kilograms, these behavioural changes can pose considerable dangers not only to themselves but also to other bulls and even female elephants. Caution and minimal interaction are advised when dealing with bull elephants in musth, only engaging when necessary.

In captivity, managing bull elephants during musth presents unique challenges for both the elephants and their caretakers. Typically, docile elephants have been known to become uncontrollably aggressive, posing risks to caretakers, facilities, and other elephants. Traditional methods involve tethering these elephants to trees and reducing their food intake in the hope of expediting the end of musth. However, these techniques can lead to severe leg wounds from the ropes used for restraint, exacerbate aggression, and create significant hazards for their keepers or mahouts. Tragically, human fatalities resulting from encounters with musth elephants are not uncommon, perpetuating lasting psychological harm for these gentle giants. Unfortunately, the treatment of musth bulls in India has remained largely unchanged for centuries.

RKTEWT has redefined the approach to managing elephants in musth captivity. After conducting a comprehensive study and considering existing methods and welfare standards, RKTEWT designed a robust, secure, and humane approach to managing musth bulls. This method not only ensures the safety of the bulls but also guarantees the well-being of their mahouts. RKTEWT has established a dedicated area exclusively for managing bull elephants in musth, specially designed musth-proof enclosures, where the male elephants are housed during musth. Within this facility, adult male elephants in musth are housed in large holding paddocks, entirely free from chains or ropes. The design of these enclosures and the husbandry protocols followed with musth elephants allows the facility to take care of the males in musth without restraining them. This is also possible due to the highly experienced team of international elephant trainers at RKTEWT. They work with the mahouts, vets, and biologists to curate individual training protocols for elephants as per their medical needs. These enclosures are purposefully designed to address the care and medical needs of the animals. This innovative approach offers an alternative management strategy that prioritizes the safety of both the bull elephants and their mahouts. The spatial separation of the two parties is always maintained until the musth cycle concludes, eliminating the need for direct human contact as the sole means of control. The enclosure design aims to provide the bull elephants with a sense of security and control over their environment, in contrast to being physically tethered. Furthermore, the use of ankuses, chains, or ropes to restrain the elephants is minimized, with management relying on conditioning the animals to follow a routine before and during the musth period. The primary focus of this approach is to afford elephants opportunities to express a full range of natural behavioural responses.

Importantly, there is currently no such facility in India with a similar approach. The experience gained at RKTEWT in managing musth elephants have the potential to transform the way these animals are cared for by providing a robust, safe, and compassionate management tool. The design of the paddocks holds promise for reducing injuries to elephants and ensuring the safety of both the animals and their mahouts.

As an organisation dedicated to advancing the welfare of captive animals in India, RKTEWT is committed to leading the way in promoting this humane management practice as an alternative tool for managing bulls in musth. This approach allows elephants to transition out of musth without the use of chains or other forms of cruelty, employing positive reinforcement and a large enclosure. The routine training and careful handling ensure that elephants recover from musth with

minimal harm to themselves and complete protection for their caretakers. This approach to managing bulls in musth is marked by care, the latest research, medical expertise, and teamwork, all geared towards ensuring the safety of both the elephants and dedicated staff.

Strengthening the mahout-elephant bond

RKTEWT recognises the importance of training and developing mahouts to ensure the well-being of the elephants under their care. Traditionally in India, the art of elephant handling and care was passed down from father to son. Unfortunately, in many places, the role of the mahout has become a lowly occupation, often taken up by those unable to find other work and lacking real knowledge of elephant care. There is a renewed effort to reestablish respect for the role of the mahout and to enhance their knowledge and skills. One of the main goals of RKTEWT is to build long-lasting relationships with mahouts and make them aware of the crucial role they play in protecting a vanishing resource: an endangered species that has been part of human history for centuries. It is essential that mahouts receive continuous training in the care and management of elephants, rather than accepting a low level of expertise as satisfactory. Training of mahouts at RKTEWT is inculcated by a team of well-trained elephant managers, staff managers, and qualified teachers who are prerequisites for building a strong team of skilled mahouts who value and take pride in their work. Only knowledgeable mahouts and managers can ensure the well-being of the elephants in their care and help secure the future of the species. Mahouts from RKTEWT regularly attend mahout workshops to gain insights and training to further this mission. Care staff at RKTEWT undergo extensive training on elephant behaviour, husbandry, and all aspects necessary to properly care for elephants as a species while also addressing the specific and individual needs of each elephant in their care.

Enhancing psychological welfare through innovative enrichment

The well-being of each elephant is a top priority at RKTEWT. This includes providing optimal care for the health, social, and psychological well-being of each elephant. A dedicated team, including senior veterinarians, nutritionists, biologist, elephant care managers, and caregivers, works in close coordination to provide the best care possible for the elephants. Together, they continually evaluate health and well-being, ensuring a “Wholesome Elephant Care” approach to meet the elephants’ individual needs. Currently, both African and Asian elephants are permanent residents at RKTEWT, living in various habitat areas within expansive facilities. With opportunities to roam, socialize, and browse throughout the day, the elephants move at their own preferred pace with companions of their choosing, which helps maintain their physical health and psychological well-being.

New elephants arriving at RKTEWT, are housed separately and not introduced to other elephants until their health status is fully assessed and an individualized care plan has been developed by the care staff.

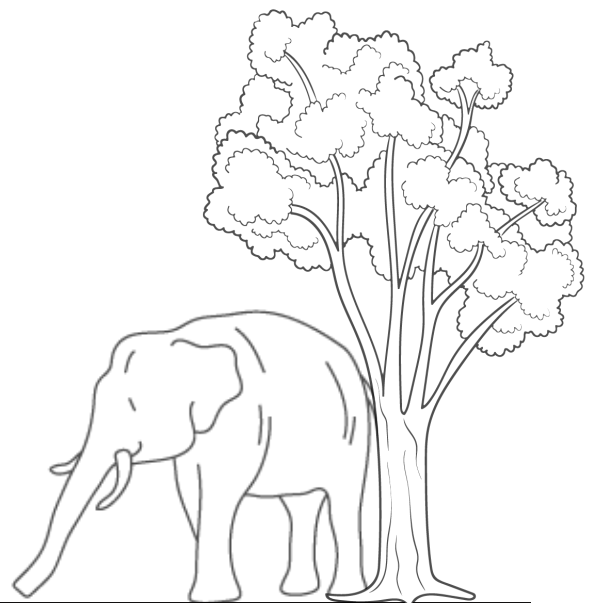
To meet the daily needs of elephants in captivity, they are provided:

- Expansive, diverse habitats and opportunities for choice and control of their environment.
- A varied diet including browse, hay, fruits, vegetables, grains, and fresh produce.
- Supplements to address deficiencies and health issues common to aging elephants.
- Ongoing husbandry care and medical treatment, including foot care, dental care, weight monitoring, routine annual testing, radiographic monitoring of chronic illnesses such as osteoarthritis, laser therapy, and pain medication.

RKTEWT has established a separate facility with dedicated enclosures for the management, care, and enrichment of elephants with known health ailments. This facility has a separate entrance and dedicated staff to ensure the highest standards of care.

Radhe Krishna Temple Elephant Welfare Trust takes inspiration from the natural feeding behaviour and nutrition of wild elephants to guide feeding practices for those in captivity. RKTEWT tries to replicate these natural feeding opportunities as closely as possible. Given that wild elephants can spend 14 to 18 hours a day feeding, elephants at RKTEWT are allowed to feed during their idle time. Most elephants in captivity have excessive amounts of high-sugar diets. Such foods deviate from the elephant’s natural diet of high-roughage and low-calorie grasses. High caloric intake can lead to excessive weight gain, contributing to conditions such as arthritis and foot problems. Additionally, foods not naturally available to elephants in the wild often lack essential minerals, vitamins, and nutrients necessary for their health. One of the important goals of RKTEWT is to provide a well-balanced diet that meets all their nutritional needs.

Daily care for elephants at RKTEWT includes providing clean drinking water, a proper diet, opportunities for social interactions, regular training sessions, and maintaining healthy skin and feet. Elephants are intelligent and social animals. In the wild, older elephants teach and discipline calves to understand their role within the family unit. In captivity, mahouts foster and nurture social relationships among the elephants to ensure safe interactions. Regular training sessions offer mental and physical stimulation and build trust between the mahout and the elephant, facilitating medical care with minimal stress to the animal. Daily baths are crucial for skin care and allow for the inspection of the elephant’s skin and feet for any abrasions or cuts that may require medical attention.



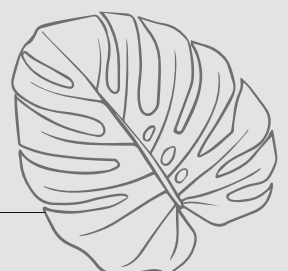
Conclusion and Way Forward

In conclusion, the Radhe Krishna Temple Elephant Welfare Trust (RKTEWT) exemplifies a forward-thinking and compassionate approach to the care of captive elephants. Through its commitment to modern ethical standards, RKTEWT has developed an extensive and holistic welfare programme that addresses the physical, psychological, and social needs of these majestic animals. The Trust's innovative practices, including advanced medical care, specialized nutrition, and humane management of musth bulls, set new benchmarks for elephant care in captivity. By fostering a nurturing environment that mirrors the natural behaviours of elephants, RKTEWT not only enhances the well-being of its residents but also serves as a model for improving captive elephant welfare globally. This comprehensive and dynamic approach ensures that RKTEWT remains at the forefront of elephant conservation efforts and welfare, inspiring others to adopt similar practices and contribute to the protection and dignity of these endangered creatures.

Looking ahead, RKTEWT envisions several key initiatives to further its impact:

1. **Research and Innovation:** Establishing a dedicated research wing to explore emerging health and behavioural challenges, with a focus on zoonotic diseases, reproductive health, and the psychological well-being of captive elephants. Leveraging AI and machine learning technologies to monitor health and behaviour in real time.
2. **Capacity Building:** Developing advanced training modules for mahouts, veterinarians, and conservation professionals to ensure the highest standards of care. Expanding knowledge-sharing platforms through workshops, conferences, and online courses.
3. **Global Partnerships:** Strengthening collaborations with leading conservation organizations, zoological institutions, and research institutions worldwide. Sharing RKTEWT's successful models and practices to inspire global standards in elephant welfare.
4. **Community Engagement:** Enhancing outreach programmes to involve local communities in elephant conservation efforts. Promoting eco-tourism and awareness campaigns that highlight the importance of humane treatment and biodiversity preservation.
5. **Infrastructure Expansion:** Creating new facilities to accommodate more elephants in need and developing specialized units for elderly and disabled elephants. Incorporating sustainable and eco-friendly practices in facility design and operations.
6. **Policy advocacy:** Advocating for stronger legal frameworks to protect captive elephants in India. Collaborating with policymakers to implement guidelines that prioritize animal welfare and ethical treatment.

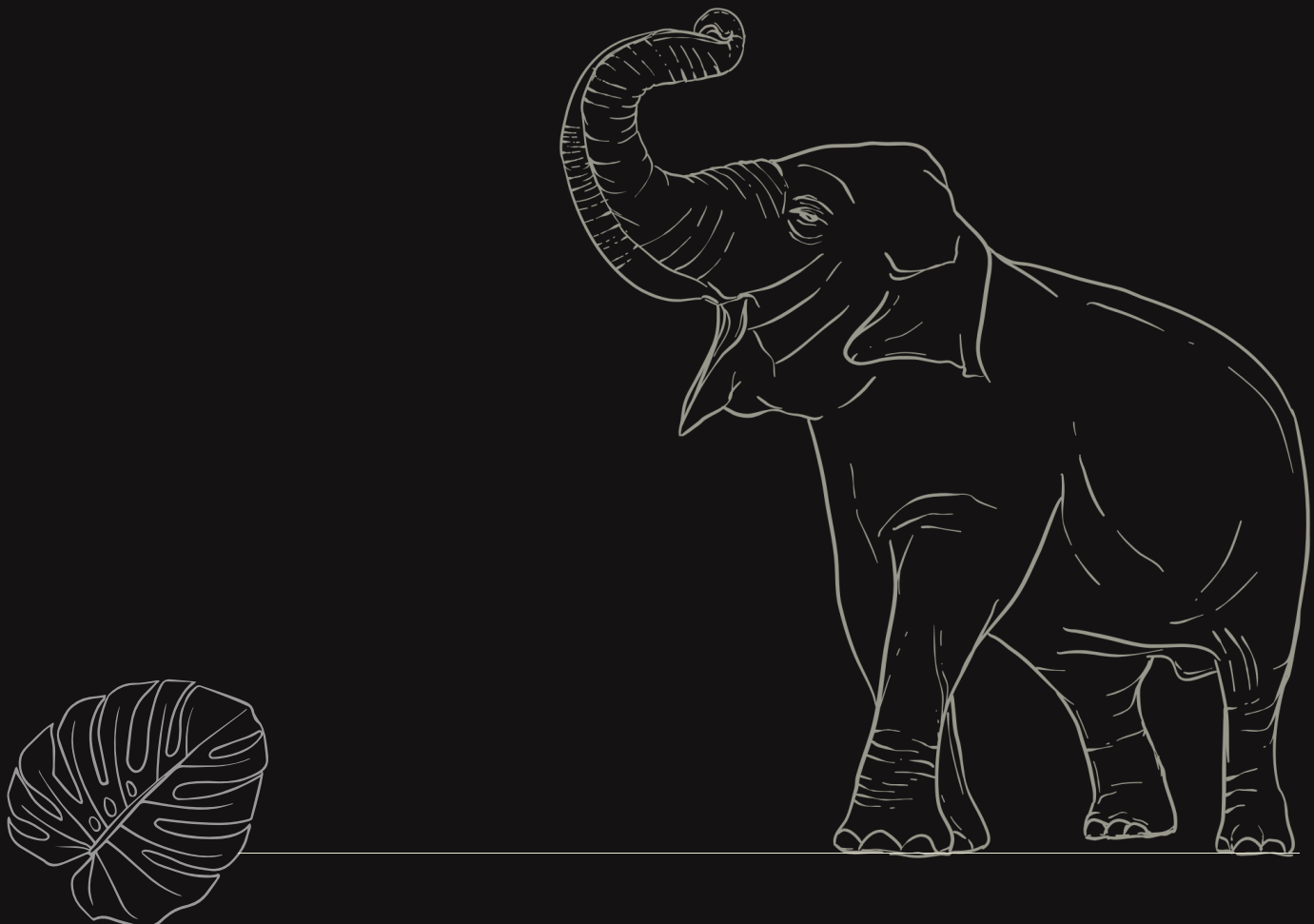
By implementing these initiatives, RKTEWT aims to solidify its role as a global leader in elephant welfare, conservation, and advocacy. The Trust's commitment to continuous improvement and innovation ensures that it remains a beacon of hope for the preservation and dignified treatment of these majestic creatures. Through these efforts, RKTEWT not only safeguards the lives of the elephants under its care but also contributes to the global movement towards ethical and sustainable wildlife conservation.



References

1. AsERSM (2022). Final Report: Third Asian Elephant Range States Meeting. Kathmandu, Nepal.
2. Brown, J.L., Paris, S., Prado-Oviedo, N.A., Meehan, C.L., Hogan, J.N., Morfeld, K.A. & Carlstead, K. (2016). Reproductive health assessment of female elephants in North American zoos and association of husbandry practices with reproductive dysfunction in African elephants (*Loxodonta africana*). PLoS ONE, 11(7), p.e0145673. doi:10.1371/journal.pone.0145673.
3. Brown, J.L., Bansiddhi, P., Khonmee, J. & Thitaram, C. (2020). Commonalities in management and husbandry factors important for health and welfare of captive elephants in North America and Thailand. Animals, 10(4), p.737. doi:https://doi.org/10.3390/ani10040737.
4. Carlstead, K., Paris, S. & Brown, J.L. (2019). Good keeper-elephant relationships in North American zoos are mutually beneficial to welfare. Applied Animal Behaviour Science, 211, pp.103–111. doi:10.1016/j.applanim.2018.11.003.
5. Dhairykar, M. & Singh, K.P. (2020). Management of nutrition in captive Asian elephants. International Journal of Veterinary Science and Animal Husbandry, 5(4), pp.160–163.
6. Greco, B.J., Meehan, C.L., Miller, L.J., Shepherdson, D.J., Morfeld, K.A. & Andrews, J. (2016). Elephant management in North American zoos: environmental enrichment, feeding, exercise, and training. PLoS ONE, 11(7), p.e0152490. doi:10.1371/journal.pone.0152490.
7. Hart, L. & Sundar (2000). Family traditions for mahouts of Asian elephants. Anthrozoös: A Multidisciplinary Journal of the Interactions of People & Animals, 13, pp.34–42. doi:10.2752/089279300787000055.
8. Holdgate, M.R., Meehan, C.L., Hogan, J.N., Miller, L.J., Rushen, J., De Passillé, A.M., Soltis, J., Andrews, J. & Shepherdson, D.J. (2016). Recumbence behavior in zoo elephants: determination of patterns and frequency of recumbent rest and associated environmental and social factors. PLoS ONE, 11(7), p.e0153301.
9. Kane, L., Forthman, D. & Hancocks, D. (2005). Optimal conditions for captive elephants: a report by the Coalition for Captive Elephant Well-Being. Available at: http://www.elephantcare.org/protodoc_files/new%2006/CCEWBOptimalConditions.pdf.
10. Lainé, N. (2018). Elephant tuberculosis as a reverse zoonosis: postcolonial scenes of compassion, conservation, and public health in Laos and France. Medical Anthropology Theory, 5(3), pp.157–176. doi:10.17157/mat.5.3.379.
11. Lair, R.C. (1999). Gone Astray: The Care and Management of the Asian Elephant in Domesticity. Dharmasan Co., Ltd., Bangkok.
12. Lee, P.C. & Moss, C.J. (2014). African elephant play, competence and social complexity. Animal Behavior and Cognition, 2, pp.144–155. doi:10.12966/abc.05.05.2014.
13. Lewis, K.D., Shepherdson, D.J., Owens, T.M. & Keele, M. (2010). A survey of elephant husbandry and foot health in North American zoos. Zoo Biology, 29(2), pp.221–236. doi:10.1002/zoo.20291.
14. Menon, V. & Tiwari, S. (2019). Population status of Asian elephants (*Elephas maximus*) and key threats. International Zoo Yearbook, 53. doi:10.1111/izy.12247.

15. Miller, M., Hogan, J. & Meehan, C. (2016). Housing and demographic risk factors impacting foot and musculoskeletal health in African elephants (*Loxodonta africana*) and Asian elephants (*Elephas maximus*) in North American zoos. PLoS ONE, 11(7), p.e0155223. doi:10.1371/journal.pone.0155223.
16. Morfeld, K.A., Meehan, C.L., Hogan, J.N. & Brown, J.L. (2016). Assessment of body condition in African (*Loxodonta africana*) and Asian (*Elephas maximus*) elephants in North American zoos and management practices associated with high body condition scores. PLoS ONE, 11(7), p.e0155146. doi:10.1371/journal.pone.0155146.
17. Mumby, H.S. (2019). Mahout perspectives on Asian elephants and their living conditions. Animals, 9, p.879. doi:10.3390/ani9110879.
18. Radhakrishnan, M.C., Rajeev, T.S. & Radhakrishnan, C.N. (2011). Job risks and problems of mahouts (elephant handlers) in Kerala, South India. Gajah, 34, pp.18–19. Available at: <https://www.asesg.org/PDFfiles/Gajah/34-18-Radhakrishnan.pdf>.
19. Ramanathan, A. & Mallapur, A. (2008). A visual health assessment of captive Asian elephants (*Elephas maximus*) housed in India. Journal of Zoo and Wildlife Medicine, 39, pp.148–154. doi:10.1638/2007-0008R1.1.
20. Readyhough, T.S., Joseph, S., Davis, M., Moresco, A. & Schreier, A.L. (2022). Impacts of socialization on bull Asian elephant (*Elephas maximus*) stereotypical behavior. Journal of Zoology and Botany, 3(1), pp.113–130. doi:10.3390/jzbg3010010.



Figures



Fig 1: Enrichment toys intended to mimic elephants' natural behaviour of using their trunks and feet.



Fig 2: Puzzle feeders make elephants use their natural skills and diligence when gathering and eating food.



Fig 3: Suspended hay nets are useful ways to keep elephants engaged.

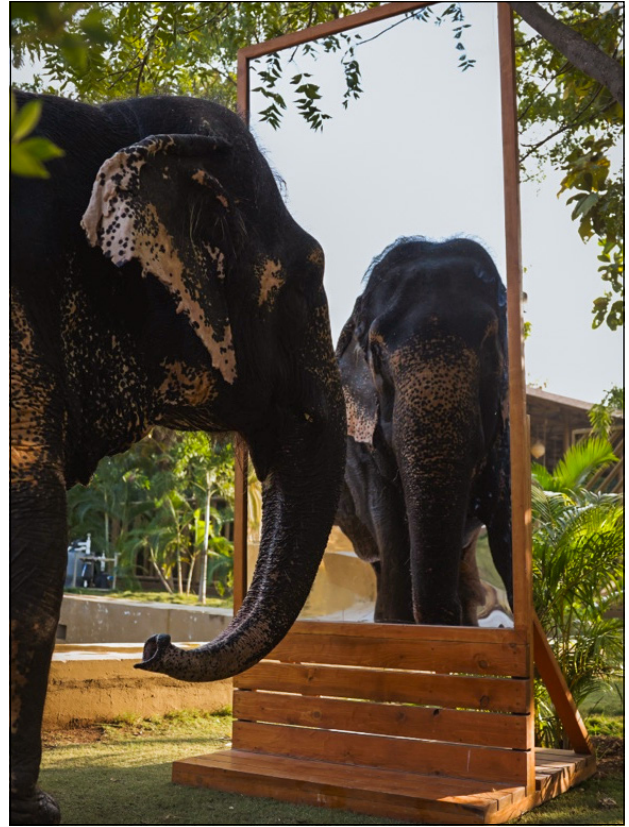


Fig 4: The mirror test: Elephants can recognize themselves in a mirror.



Fig 5: Elephants live in complex social systems with families. In captivity, the presence of other elephants is one of the most effective forms of social enrichment possible.



Fig 6: Mahouts are the most important factor of the elephant's wellness in captivity as they dedicate their lives to these majestic beings.



Fig 7: In captivity, elephants typically sleep up to six hours.

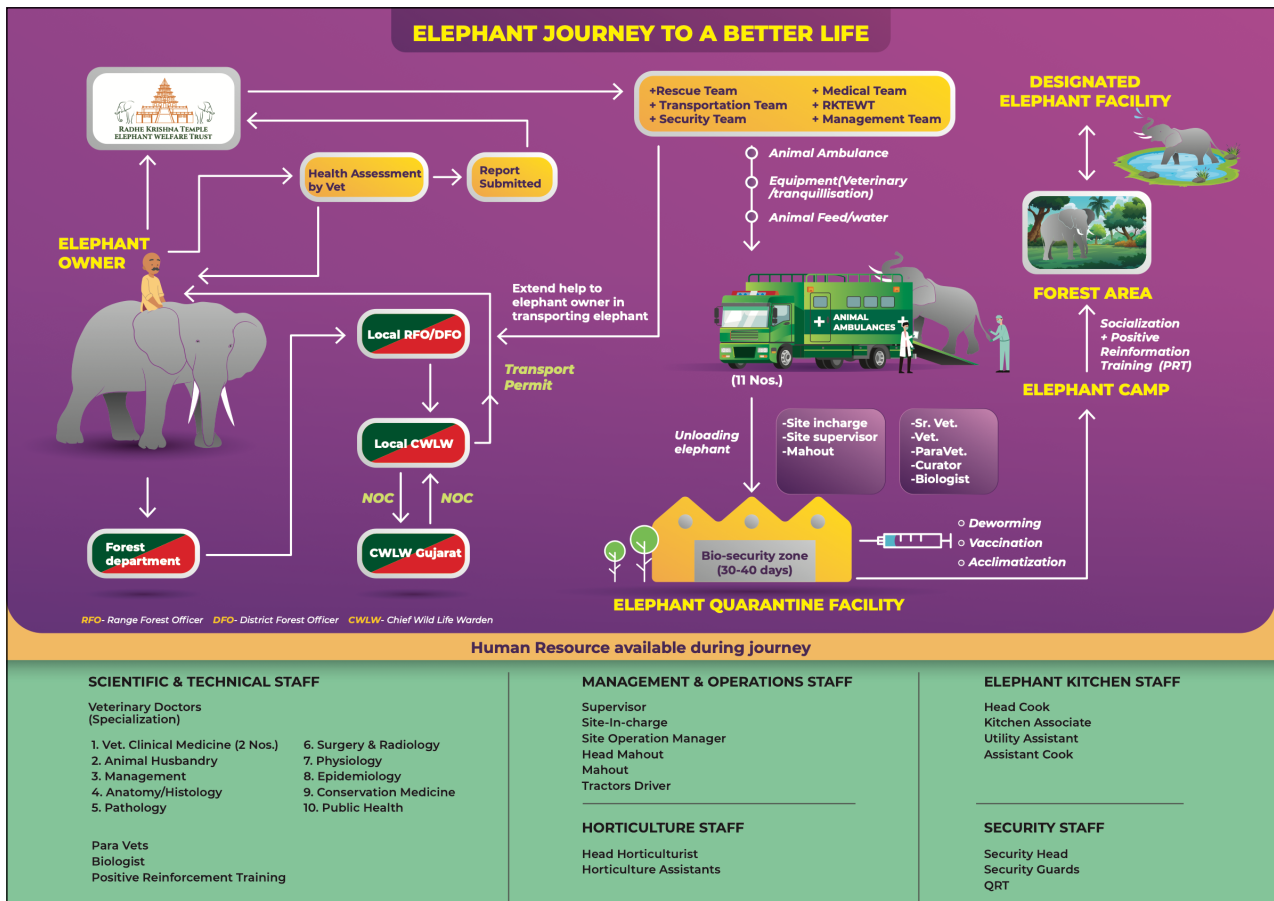
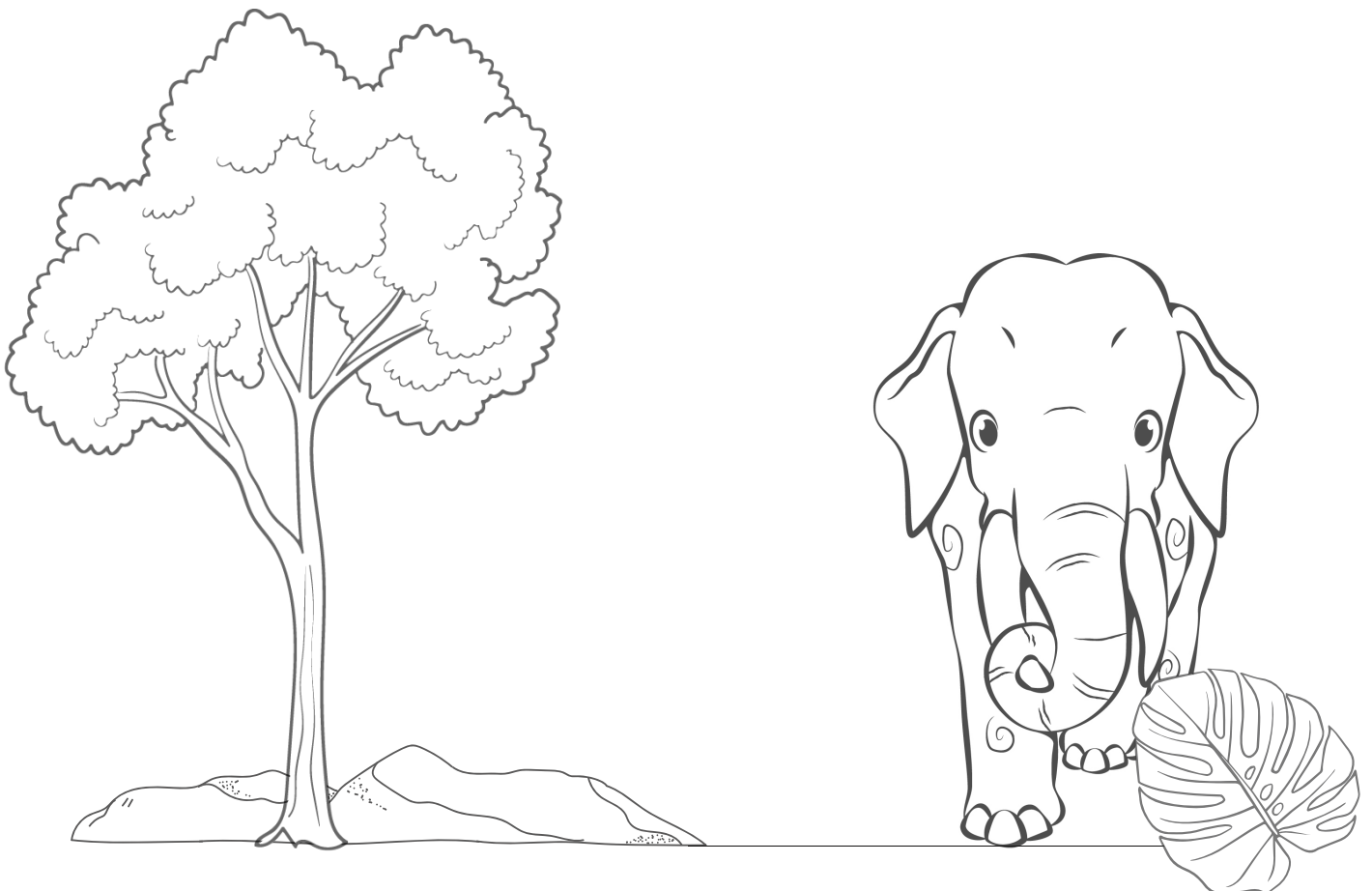


Fig 8: Flow chart explaining the process on Elephant Journey.



TRUMPET

Quartely Journal

Volume IV

January 2025

