

  
**ex-situ**  
UPDATES



Central Zoo Authority  
केन्द्रीय विज्ञानाघर प्राधिकरण



Ministry of Environment, Forest  
and Climate Change

# The Road to Zootopia

Why zoos still matter  
and how they  
must evolve



## BEST PRACTICES

Conservation breeding,  
enclosure enrichment, waste  
management and more



THE ELEPHANT DOCTOR: K K SARMA  
WOMEN IN ZOOS: NARI SHAKTI TO THE FORE  
PHOTO-FEATURE: CHIDIYATAPU BIOLOGICAL PARK  
IMPORTANT EVENTS, SEMINARS & WORKSHOPS

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#### ON THE COVER

Red panda (*Ailurus fulgens*) at Padmaja Naidu Himalayan Zoological Park, Darjeeling, West Bengal (Photo: Gobind Sagar Bhardwaj)

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## from the **MEMBER SECRETARY**

One million plant and animal species are on the verge of extinction, with alarming implications for human survival, according to a United Nations report released a few months back. The landmark report from universities across the world goes further than previous studies by directly linking the loss of species to human activity.

Under these circumstances, captive breeding becomes a great tool to save some of the species that cannot be saved in the wild. Recent advancements and interventions in the field of molecular biology have opened up new vistas for the conservation of wild animals.

I am pleased to share that the Central Zoo Authority (CZA) is coordinating a planned **Conservation Breeding Programme** for identified endangered captive animal species. The programme has been launched for 23 species at identified coordinating and participatory zoos. In order to facilitate such zoos and achieve success in breeding of identified animals through the intervention of assisted reproductive technologies and biotechnology tools, CZA recently signed an MoU with the Laboratory for the Conservation of Endangered Species (LaCONES), Centre for Cellular and Molecular Biology, Hyderabad.

Another issue that CZA has sought to address is that of zoos which lack the capacity and facilities to treat sick animals. Animal activists have started questioning the very existence of such zoos. The scheduled periodical testing of wild and captive animals, disease surveillance and vaccination, following hygiene and prophylactic methods etc play a major role in disease management - including the management of **zoonotic diseases** which are spread between animals and humans.

CZA has designated the Indian Veterinary Research Institute, Bareilly (UP) as a National Referral Centre (NRC) for providing **specialised services and diagnostic facilities for better health care of zoo animals**, and signed an MoU with them. We are providing 100% financial assistance to the programme, and the recognised zoos of the country can avail the facility of veterinary health care regarding disease diagnostics.

Scientific zoo management is a tough task and it can only be achieved through teamwork.

**Dr S P Yadav (IFS)**  
**Member Secretary**  
**Central Zoo Authority**



about the **CENTRAL ZOO AUTHORITY (CZA)**



Central Zoo Authority  
केन्द्रीय चिड़ियाघर प्राधिकरण



Ministry of Environment, Forest  
and Climate Change

The Central Zoo Authority (CZA) is the body of the Ministry of Environment, Forest and Climate Change (MoEFCC), Government of India responsible for monitoring/regulating zoos. It is an affiliate member of the World Association of Zoos and Aquariums (WAZA).

The CZA has been constituted under the section 38A of Wild Life (Protection) Act, 1972. The main objective of the authority is to complement the national effort in conservation of wildlife. Standards and norms for housing, upkeep, healthcare and overall management of animals in zoos have been laid down under the Recognition of Zoo Rules, 1992.

Establishment as well as operation of a zoo in the the country requires approval of the CZA. The Authority evaluates the zoos with reference to the parameters prescribed under the Rules and grants recognition accordingly. The Authority's role is more of a facilitator than a

regulator, therefore it provides technical and financial assistance to such zoos which have the potential to attain the desired standard in animal management.

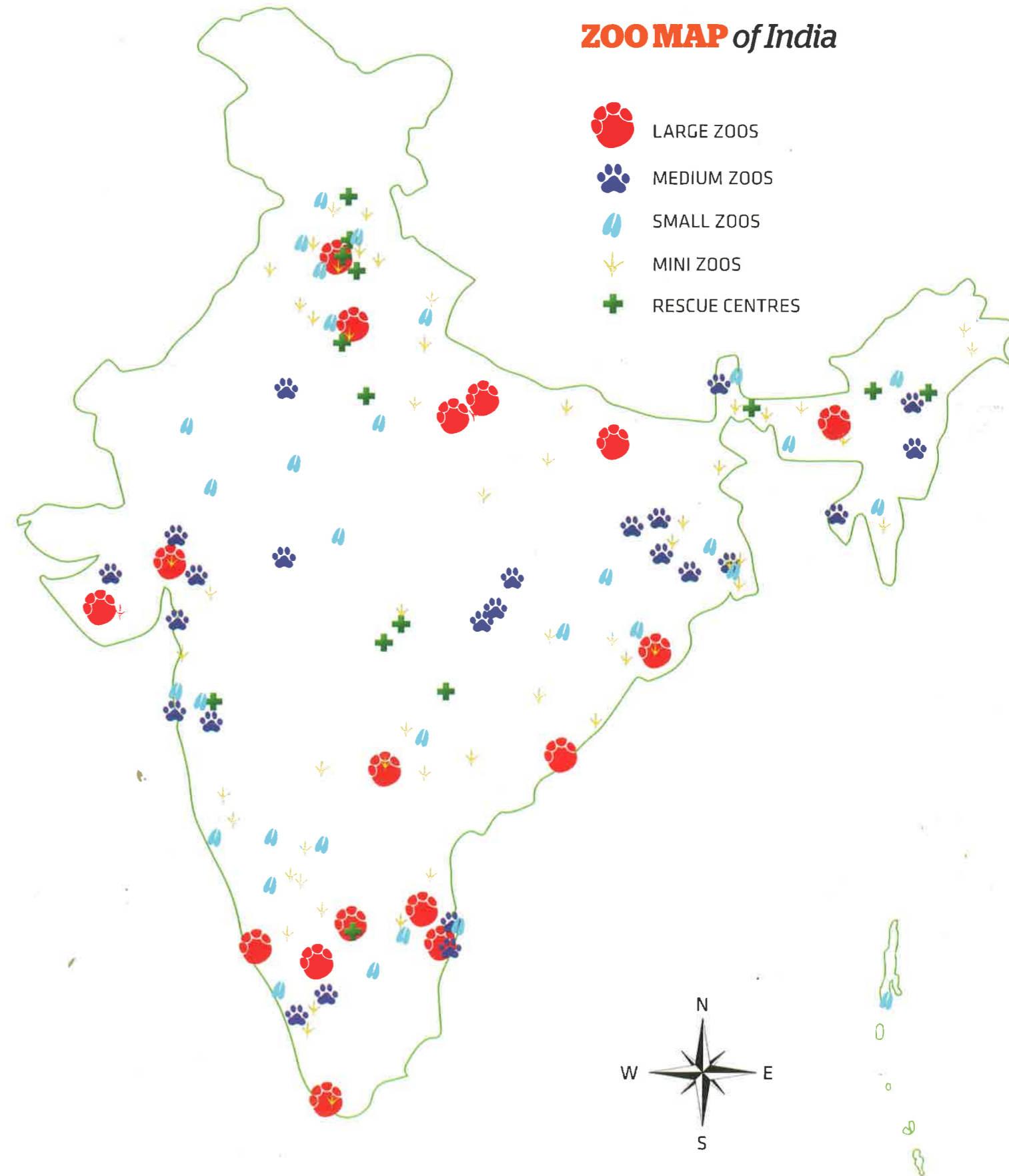
Apart from the primary function of grant of recognition and release of financial assistance, the acquisition/transfer of captive animals by zoos is regulated by the CZA.

Exchange of animals between Indian and foreign zoos is also approved by the Authority before the requisite clearances under EXIM Policy and the CITES permits are issued by the competent authority.

The Authority also coordinates and implements programmes on capacity building of zoo personnel, planned breeding programmes, and *ex-situ* research including biotechnological intervention for the conservation of species, to complement *in-situ* conservation efforts in the country.

**ZOO MAP of India**

-  LARGE ZOOS
-  MEDIUM ZOOS
-  SMALL ZOOS
-  MINI ZOOS
-  RESCUE CENTRES





A male Great Indian Bustard (*Ardeotis nigriceps*) near Desert National Park, Rajasthan (Photo: Pranav Capila)

### >> A New, Evolving Role

The nature of zoos has changed in contemporary times. From mere menageries to open-exhibits, the larger scope of zoos now is *ex-situ* conservation. They have become centres of intensive research and management as they provide the opportunity to observe animals closely and monitor them 24x7. They also aid in *ex-situ* conservation of critically endangered species by attempting conservation breeding in captivity.

A recent, remarkable story is of the successful hatching of eggs of the **Great Indian Bustard (GIB)**. Barely 150 of these birds are estimated to be surviving globally. As part of an overall conservation programme by the Ministry of Environment, Forest and Climate Change (MoEFCC) in partnership with the Wildlife Institute of India, Dehradun and the Government of Rajasthan, an **incubation and chick-rearing centre** was set up in Jaisalmer. In June 2019,

nine GIB eggs collected from the Desert National Park hatched at the centre and the chicks are reported to be doing well. These chicks will now serve as a founder population for a scientifically designed programme for restocking GIBs in the wild. Challenges remain as the GIB is a slow breeding animal and there must be sufficient, undisturbed habitat to support its growth. Readying the necessary habitat will be key in the coming months and years. [More information: *Indian Express*, January 7, 2020]

Another uplifting story comes from West Bengal. On December 17 last year, two captive **Himalayan griffon vultures** fitted with transmitters were released into the wild from the **Rajabhatkhawa Vulture Breeding Centre** at Buxa Tiger Reserve in the Alipurduar district of North Bengal. For about a month prior to their release, the vultures were fitted with dummy transmitters to ensure the birds adapted. Researchers and officials from the Bombay Natural History Society

Himalayan griffon vulture (*Gyps himalayensis*) // Hindustan Times File Photo)



“There is no way you can appreciate the quiddity of an elephant except by seeing one at close quarters. People ought to be able to see what an animal looks like. And smells like. And sounds like. I think that is quite important. Actually, very important.”

Sir David Attenborough  
*The Guardian*, February 2, 2020

### The **BIG PICTURE**

## The Road to Zootopia

**A** Are zoos outdated relics of a less enlightened era? Do they sufficiently serve the purpose of education and conservation?

We address these prickly questions that have gained currency in recent years and tell you why zoos matter, and must reinvent themselves to be standard bearers for conservation science and empathy towards wildlife.



A leopard (*Panthera pardus*) being rescued from a residential area near Hyderabad (*Telangana Today*)

and the West Bengal Forest Department monitored the birds' movements at the breeding centre before they were released. There are 86 White-backed vultures, 17 Slender-billed vultures and 27 Long-billed vultures at the Rajabhatkhawa breeding centre, which is spread over five acres. Out of these birds, 60 were born in captivity. [More information: [Hindustan Times, December 17, 2019](#)]

An interesting story from Assam is how a 'breeding loan' arrangement between **Assam State Zoo** and **Nagaland Zoological Park** has helped conserve the **Himalayan serow**, an endangered goat-antelope found in the Eastern Himalaya. The recipient zoo had only two female serows while the Nagaland zoo had only one male. Based on approvals from the Central Zoo Authority, both zoos carefully planned the exchange and pairing, and in January this year the first serow calf was born. [More information: [Deccan Herald, January 15, 2020](#)]

### >> Zoos as Education, Recreation and Research Centres

With their vast reach - approximately 80 million visitors are known to visit the 145 large, medium and mini category zoos in India - zoos serve as important centres of education and awareness. They are places for recreation, a 'family's day out', for a majority of city-dwelling citizens. Zoos also offer opportunities for people to connect with nature. For many young naturalists, photographers and researchers it was their childhood visits to the zoo that kindled their interest in nature and wildlife.

Zoos are seeing an increasing footfall. The **Arignar Anna Zoological Park**, or Vandalur Zoo as it is popularly known, is a prime attraction for the residents of Chennai. The zoo recorded 28,262 visitors in 2019, a phenomenal 77 percent rise compared to the previous year. One major attraction is the 17-acre lake inside the zoo which had dried up due to drought and has been revived by clearing up the natural drainage channels, desilting the lake and linking it to a nearby water body. The lake is now flush with local birds and migratory waterfowl, and has become a major attraction in the zoo. [More information: [www.aazp.in](http://www.aazp.in)]

As zoos house captive bred animals, they provide an excellent opportunity to study animal behaviour and genetics, and conduct research in wild animal veterinary science. With their captive bred populations, zoos have become centres of intensive scientific management especially related to ensuring captive animal health and



The Himalayan serow (*Capricornis thar*) calf born at Assam State Zoo as the result of a 'breeding loan' arrangement with Nagaland Zoological Park (Photo: Assam State Zoo)

fitness across generations. In this, genetic diversity is very important. The **Padmaja Naidu Himalayan Zoological Park**, also known as the Darjeeling Zoo, is exploring the possibility of getting **Red pandas** from Europe and Australia to introduce new bloodlines to the current population at the zoo. This is particularly crucial as a recent population viability analysis by researchers from the Centre for Cellular and Molecular Biology reveals that this zoo's red panda population has a very low survival probability (<2%) and will suffer a rapid loss in its genetic diversity to 37%, mainly due to a small population size and skewed male-biased sex ratio. The International studbook keeper and the conveyor of the Global Species Management Plan (GSMP) have agreed to the international exchange. [More information: [www.pnhzpz.gov.in](http://www.pnhzpz.gov.in)]

### >> Centres for Wildlife Rescue

Zoos also have an increasing role as urban rescue centres for injured wild animals, and increasingly, those caught in conflict situations. For instance, zoo vets from the **Nehru Zoological Park** in Hyderabad, along with forest officials, recently rescued two leopards within the span of a couple of days. One of the leopards had forayed into a residential area near Hyderabad on January 13, 2020. A day later, a leopard caught in a wire snare trap in an agricultural field in Nalgonda district was safely immobilised and shifted to the zoo the same day. It may be released later back into the wild after its condition has stabilised. Such rescue centres enable temporary housing and treatment of wild animals until they are fit to be released back to the wild. [More information: [Telangana Today, January 15, 2020](#)]

Globally too, zoos are increasingly playing the role of rescue centres for distressed animals, especially during natural and other disasters. The devastating wildfires in Australia burnt more than 20 million acres across the continent, killing at least 25 people and over a billion animals. Most zoos, like **Zoos Victoria**, found themselves pressed into service as de facto emergency relief agencies, saving impacted animals on the frontlines. The **Granby Zoo** raised funds to aid the rescue of Australia's wildlife and flora, which have been ravaged by the bushfires. [More information: [Globalnews.ca](http://Globalnews.ca), January 17, 2020]

>> **Coronavirus: Ex-situ Populations Help Gain Insights into Zoonosis**

The global health crisis triggered by coronavirus is a reminder of the danger of zoonosis - the ability of pathogens to enter the human population from an animal host.

A Formosan pangolin (*Manis pentadactyla*) at Taipei Zoo (Photo: Sam Yeh / AFP / Getty Images)



With the coronavirus believed to be transmitted from bats or possibly pangolins, **zoonotic diseases** are back into focus amid increasing concern regarding the acceleration of such infections. Scientists have identified about 400 emerging diseases since 1940 and more than six out of 10 have been zoonotic, according to a 2012 study published in *The Lancet*, a British medical journal. They include HIV from chimpanzees, Ebola and Marburg from bats, hantavirus from mice, MERS from camels, and swine flus and avian flus. Bats and pangolins are now suspected of being reservoirs of such viruses that get 'activated' when wild populations are hunted and their natural habitats such as forests cleared for development. Observations conducted on *ex-situ* populations are among the avenues to seek new insights into the issue. [More information: [The Washington Post](http://The Washington Post), February 7, 2020]

Finally, some interesting news from the US, where some zoos are now catering to people with autism or sensory sensitivity (aversion to loud noises, bright lights etc) so that they can enjoy the sights and sounds without being overwhelmed. The **Lake Superior Zoo** will offer sensory bags with noise-cancelling headphones, 'widgets' or toys the kids can focus on, verbal cue cards and other resources. At the **Woodland Park Zoo** in Seattle, families are offered a sensory map that depicts quiet areas if those suffering from autism need to escape the crowds.

This is another step towards zoos becoming more empathetic towards both their inmates and their visitors.

**TRIBUTE**

**Sally Raulston Walker**  
(12 October 1944 - 22 August 2019)

Sally Walker came to India in the 1970s to study yoga and Sanskrit at Mysore University. She was ready to leave when she observed some misbehaviour by visitors in an otherwise superb Mysore Zoo, and founded the Friends of Mysore Zoo in 1981. So started her life as a wildlife and zoo conservationist, a field in which she worked honorarily for 36 years.

With the support and funding from of the Department of Environment in the central government, she founded **Zoo Outreach Organization (ZOO)** with the objective of improving zoos in every way: philosophy, vision, and most of all, welfare and standards of care. Sally's combined interest in animal welfare and wildlife conservation served her well in developing and sustaining a variety of innovative programmes. With her focus on education, ZOO conducted several creative education and outreach programmes, and established the Zoo Educator Network for a wider and lasting impact.

Sally played a major role in lobbying for zoo legislation for India during the late 1980s. The **Central Zoo Authority** was established as a statutory body under the (then) Ministry of Environment and Forests in 1992 and Sally served as a Member for six years. By 1993, she along with Sanjay Molur shifted the focus of ZOO from a purely zoo organisation to an *in-situ* conservation and meta-population organisation conducting



several population and habitat viability assessments, leading to the development of holistic action for species and habitat conservation in the region.

Through the **South Asian Zoo Association for Regional Cooperation**, which she helped establish, Sally worked toward improving zoo standards in the region by (1) highlighting the negative impact of substandard zoos in individual animal welfare and wild animal health, and (2) creating mechanisms for well-managed zoos to take the lead in improving dysfunctional zoos.

In 2003, Sally was conferred the **Heini Heidiger Award** for her contribution to the zoo profession. She was the first woman, the first non-academic, and the first person focused on non-western zoos to receive this honour.

Source: Zoo Outreach Organisation



Western Tragopan (*Tragopan melanocephalus*) at the Sarahan Pheasantry (Photo: Lakshminarasimha R)

Western Tragopan is listed as Vulnerable by the IUCN and is endemic to the Western Himalaya.

In 2012, the pheasantry introduced new husbandry regimes that incorporated essential aspects of the species' ecology to ensure optimal population growth. Consequently, the birds are now housed in larger, undisturbed aviaries and are fed a diet comprising fresh vegetative matter. Lakshminarasimha R, a Biologist based at the Sarahan Pheasantry, observes that the change in housing conditions has resulted in species-typical nesting behaviour, better egg quality, natural incubation and parent rearing, contributing to improved reproductive success and population growth. These efforts have complemented the conservation efforts to establish a reserve population of this state bird of Himachal Pradesh. There are currently 44 birds at Sarahan and an experimental reintroduction of the species into Daranghati Wildlife Sanctuary is being

planned for Spring-Summer 2020.

Another success story about pheasants comes from the **Sri Venkateswara Zoological Park**, Tirupati, which has been the coordinating zoo for the conservation breeding of **Grey Jungle fowl** (*Gallus sonneratii*) since 2014. The Centre for Cellular and Molecular Biology, Hyderabad conducted DNA tests that showed the founder population to be genetically healthy. The zoo currently has a population of 68 Grey Jungle fowl and is now in a position to share the birds with other zoos through exchange programmes.

Ms Babitha, the Curator of the Park attributes the success of this exercise to enclosure enrichment and the provision of a natural environment. Special care has been taken to provide sufficient space, light and air circulation in the enclosure; perching and roosting sites have been provided for, and native grasses and shrubs grown so that the

The fodder cultivation plot at Nehru Zoological Park, Hyderabad (Photo: Nehru Zoological Park)



## BEST PRACTICES

### When Practice is Perfect

**W**ell-managed zoos play an important role in educating the public about wild fauna and their habitats. They also help conserve biodiversity while maintaining high standards of both animal care and visitor amenities. **Ex-situ Updates** looks at some of the best practices in these fields from zoos around the country.

#### >> Breeding Success

The **Sarahan Pheasantry** in Himachal Pradesh was set up in the 1990s with the aim to re-establish **Western Tragopans** (*Tragopan melanocephalus*) in areas where they previously occurred naturally but had declined dramatically because of anthropogenic activities. The



Greater adjutant (*Leptoptilos dubius*) stork and chick (Photo: Assam State Zoo)

birds have as natural a diet as possible. The enclosure was also made predator and rodent proof by placing it at a height and through the provision of a wire mesh in the foundation, amply covered with sand to allow the fowl to forage and 'scratch' and to keep the earth cool. The birds' diet is carefully monitored and vaccination schedules are strictly maintained.

#### >> The Stork Pays a Visit

In another example of a well-executed captive breeding exercise, the **Assam State Zoo-cum-Botanical Garden**, Guwahati witnessed the successful hatching - the first time in captive conditions - of an endangered **Greater adjutant** (*Leptoptilos dubius*), of which only about a thousand remain in the wild. Intensive literature research and *in-situ* observations were conducted to provide the breeding storks with natural conditions. Breeding platforms were made of bamboo, nesting material was brought in from the wild and supplemented regularly as the birds started constructing a nest, and food



Chelodian hatchling at the Madras Crocodile Bank Trust (Photo: Nikhil Whitaker/MCBT)

supply was increased during the nesting period in consultation with experts. "Care was taken so that the birds did not suffer undue disturbance from zoo visitors", Director Tejas M says. This case is an exemplar not just of the successful breeding of a rare species, but also of the importance of collaborative work - in this instance with the Guwahati-based NGO, Aaranyak.

#### >> Making Partnerships Work

Another instance of an important partnership comes in from the **Pilikula Biological Park**, Mangalore. Though supported by the Central Zoo Authority and the state government, the Park is run as a society, which makes the upkeep of animals very challenging. So, with efforts by the management, led by its Director H J Bhandary, the zoo has had all its animals adopted by Mangalore Refineries and Petroleum Ltd. The company has donated a sum of Rs 3.5 crores for one year as a **CSR initiative**, including funds for the upgradation of veterinary care infrastructure as well as the planting of native and endemic flora



King cobras (*Ophiophagus hannah*) at Pilikula Biological Park (Photo: Pilikula Biological Park)

of the Western Ghats to provide natural environs for the animals. This thick vegetation has even attracted a variety of wild mammals, reptiles and amphibians to the zoo premises. Interestingly, Pilikula Biological Park goes with the philosophy of concentrating on species native to the area, which account for more than 90 percent of its inmates.

#### >> Building a House for Reptiles

For zoos, pleasing both visitors and animals is a challenge. As Nikhil Whitaker, Curator of the **Madras Crocodile Bank Trust** puts it, "the animals want to hide and the visitors want to see." It is possible to achieve both, however the key is to **know inmate species well** - their territorial needs, psychology, enclosure materials etc - and may warrant field expeditions prior to their acquisition.

For example, the habitat of reptiles ranges from deserts to rainforests, so replicating the humidity and temperature as per their specific requirements is vital. If the reptiles have no access to the sun for basking it is essential to use UV lights. Each species has its peculiarities, so zoo managers and keepers should be well acquainted with its habits in the wild. For instance, some species drink drops of water off leaves, so a sprinkler (for a tortoise) or a mister (for a lizard), not a water dish, is required.

Enclosures should be escape-proof and their size and design should allow the reptiles to move about, should not be damaging to them, and particularly in the case of larger lizards like monitors, should allow for arboreal access. Hiding places and aeration via ventilation fans are crucial too.



>> **A Regal Rail Yatra**

The hallmark of a good zoo is its **empathy for its inmates**. A heartwarming example comes from the **Indira Gandhi Zoological Park** in Visakhapatnam and **Junagadh's Sakkarbaug Zoo**, who took great pains to ensure the welfare of two Asiatic lions (*Panthera leo leo*) that were to travel from Sakkarbaug to Visakhapatnam. Lions are known to experience high levels of stress during travel. The usual way of moving them between zoos is by road, which takes very long and can be bumpy and taxing especially during the summer and monsoon.

Vizag Zoo, being the conservation breeding centre for wild dogs, sent five dholes (*Cuon alpinus*) to Sakkarbaug Zoo by train, following which the lions made the 28-hour journey to Visakhapatnam in a special Parcel Van Unit on the Puri-Okha Express, accompanied by attendants and vets. "The journey was smooth," recalls Curator Yesodai Bai, "minus the usual bumps and vagaries of

Braille signages at Lucknow Zoo have improved the zoo experience for visually challenged visitors

**Python molurus**



आकार - लम्बे मोटे शरीर वाले, चिकना शक्त कमकवार धब्बे, विषहीन,  
 आकार - 3 मीटर, जन्म के समय 50 सेमी।  
 विस्तार - समूचे भारत में।  
 भोजन - चूहे, पक्षी, गीदड़ हिरन तथा जंगली सुअर जैसे बड़े जीव भी शामिल है।  
 प्रजनन - मार्च से जून तक एक बार में लगभग 100 बतख के आकार के अण्डें, 160 दिन सेमे का समय।

weather. And the lions were ready to eat within hours of their arrival at Vizag Zoo - a good sign that they were settling into their new home."

>> **Going Organic**

Another innovative idea comes from the **Nehru Zoological Park** in Hyderabad, which is utilising an eight-acre plot, earlier unused, to cultivate grasses, crops and fruit trees to provide **organic and pesticide-free food to its inmates**. Ms Kshitija, Zoo Curator mentions that they have grown sugarcane, leafy vegetables, mulberries, papaya and grasses, and are cultivating bananas through vermi-composting.

Two-thirds of the zoo's grass requirement is met through this 'food park' and around 100kg of sugarcane has been harvested. This not only provides animals like elephants, rhinoceroses, hippopotamuses and bison a healthier diet but has also kept the food bills down.

>> **Accessible, Inclusive Zoos**

While care for animals is paramount, zoos must exhibit empathy for their visitors. It is particularly important to go the extra mile to take care of less advantaged visitors. According to Director R K Singh, Lucknow Zoo has installed 49 signages with **information in Braille** so visually impaired guests can get to know the animals as well. The zoo is regularly visited by students from schools for the visually impaired, which say the experience is truly special. The Lion Safari Park in Etawah has also made efforts to make its zoo accessible by **providing wheelchairs for the physically challenged** and installing ramps to



Dhole (*Cuon alpinus*) with pups at Vizag Zoo, the conservation breeding centre for wild dogs (Photo: Dr Brij Kishor Gupta)

ensure their mobility throughout the premises.

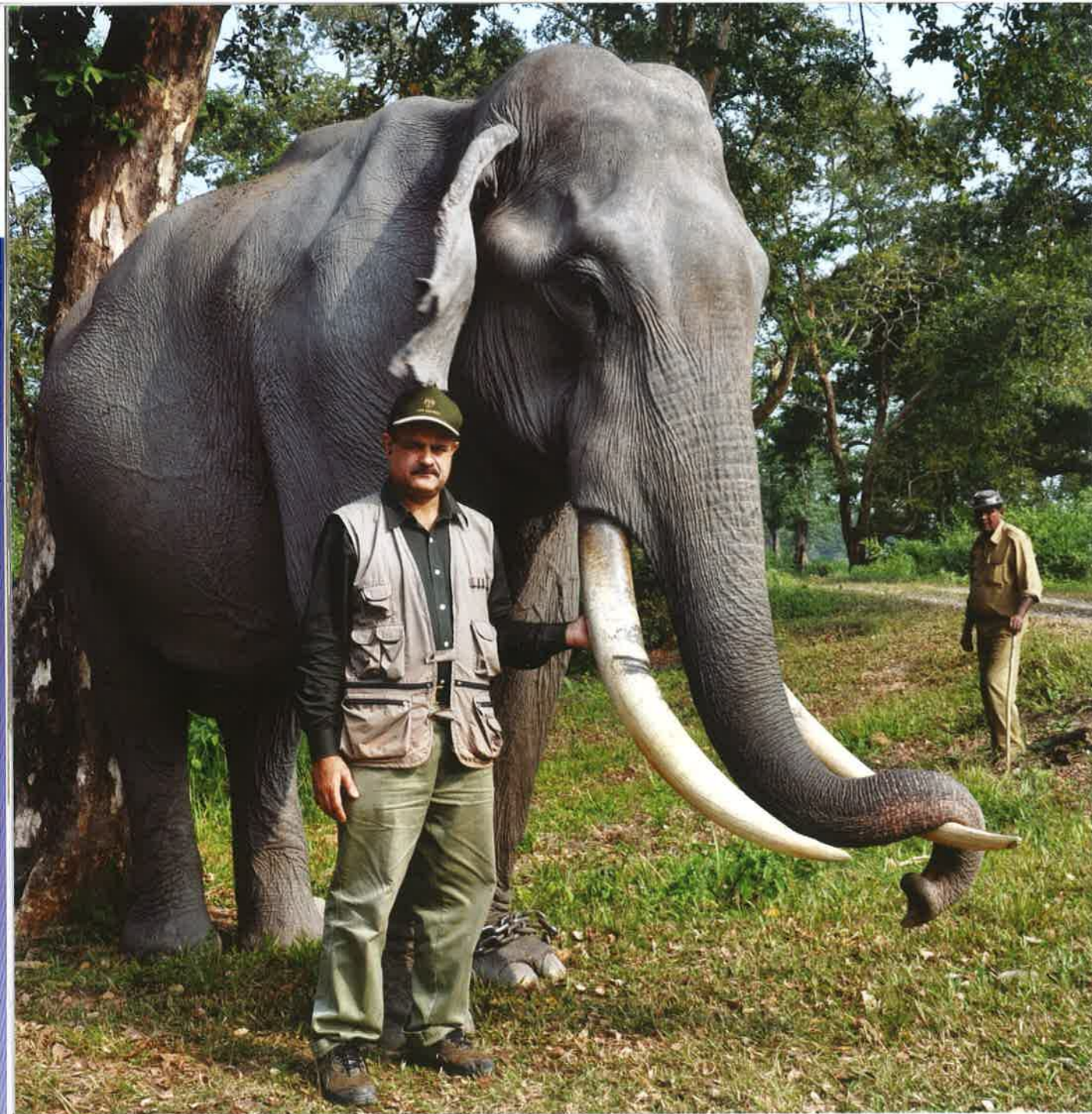
>> **Waste Wise**

**Waste disposal** is a challenge that all zoos face, and the **Sri Chamarajendra Zoological Gardens**, also known as Mysuru Zoo, has taken some exemplary measures in this regard. According to Executive Director Ajit Kulkarni, the zoo's strategy is multi-pronged. Elimination of plastic waste has been taken up aggressively: the use of mineral plastic bottles is strictly monitored and clean RO water is provided within the zoo premises. Waste is segregated and plastics sent for recycling. The zoo generates about 3000 kg of organic waste, of which fibrous dung and other waste is converted into vermi-compost and used for the zoo garden, while the excess is sold. **Bio-gas** is also generated from the organic waste, helping reduce LPG costs.

>> **Social Media Buzz**

Zoos are now increasingly taking to **social media** to increase their outreach. The Dehradun Zoo, earlier the Malsi Deer Park, is active on most popular social media channels: Instagram, Twitter, Facebook and YouTube. Here, the Zoo Director P K Patro and his team have been able to showcase events, sustainability practices (including a solar plant to generate electricity), community initiatives and updates about animals, which expectedly generate the most interest. The zoo's Facebook account has over 11,000 followers, over 1.5 lakh hits, and boasts an average reach of 170,000 per month, with the overall reach being much higher.

There are many such examples of best practices from zoos across India, which we hope to document and cover in forthcoming issues of this newsletter.



(Photo: courtesy Elephantdoctor.in)

## ANIMAL PEOPLE

### The Elephant Doctor: K K Sarma

*In recognition of his stellar contribution to the field of wild animal conservation, particularly the treatment and care of elephants, eminent veterinarian and academic **Dr Kushal Konwar Sarma** was recently awarded the prestigious Padma Shree, India's*

*fourth highest civilian award. In this exclusive interview to **Ex-situ Updates**, Dr Sarma, who hails from Barama in Assam's Kamrup district, talks about the importance of conserving wildlife, and about Lakshmi, the elephant who got him started down his current path.*

# W

#### **What made you want to become a veterinarian?**

I had a rural upbringing and we had many animals around the house - cows, goats, dogs, cats, pigeons, ducks and even a seasonal elephant, Lakshmi. Seasonal, because she was owned by a big landowner who used her for logging and kept her with us during the 'off-season'. Lakshmi and I were inseparable. I would sneak out to be with her every day. We would walk through the fields and orchards and even swim together in the river.

Then my father was transferred to another town. On our next visit to my grandparents' home I rushed to meet Lakshmi, but she wasn't there. She had died of an infection. I was inconsolable and asked my grandmother why Lakshmi didn't get treatment. She responded: "They don't have elephant doctors." I was seven or eight years old and I suppose this remained in my subconscious. Rather than choosing medicine or engineering - the go-to professions at that time - I opted for a veterinary degree in Guwahati.

#### **Why are elephants so special to you? Why do we need to conserve them?**

All animals are special to me and they all need to be conserved. I have learnt so much from animals. I started my career as a veterinarian treating cows (and I continue to do so), which are gentle and patient. Horses are magnificent animals and they taught me courage and the strength to carry on, whatever the odds.

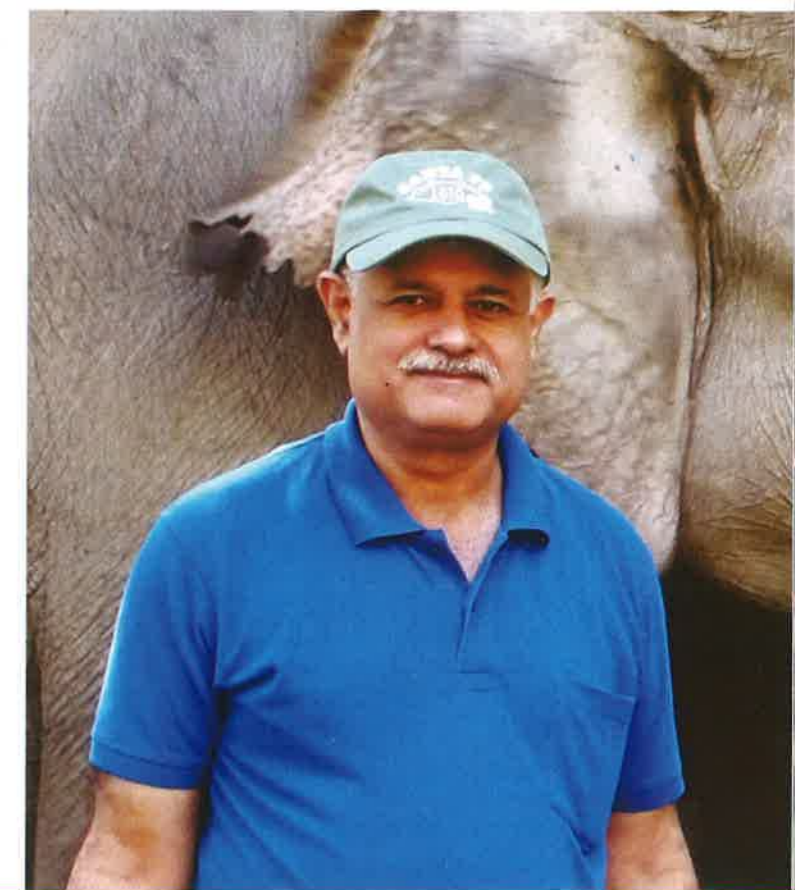
All animals and plants need to be conserved, each has its own niche, its role to play in its ecosystem. They are

all linked and if we upset the web of life it will have terrible repercussions. Elephants, for instance, digest only 40% of the food they ingest. They migrate over large distances and are great seed dispersers, contributing to the creation and diversity of forests. Without them and similarly without other wildlife we wouldn't have forests, which give us oxygen and water and help sequester carbon.

#### **You pioneered the remote tranquilisation of wild animals in Assam. Do explain.**

The remote delivery of drugs was being used in Kerala and I learnt this technique from the vets there, so I consider them my gurus. I was the first to use it in Assam and have propagated its use since. It is a safer method, whether one is treating wild animals or dealing with animals in conflict situations, and is now used widely. I adapted the remote

(Photo: courtesy Elephantdoctor.in)



tranquillising injection technique for North East India where the forests are dense, the terrain is hilly and there are a lot of water bodies, so one has to be especially careful about where and how one is tranquillising a wild animal.

**What advice would you like to give to those who are involved in the care of captive elephants?**

I was part of a CZA committee to look into the condition of elephants in zoos and make recommendations to ensure their welfare. (This was following a CZA order in 2009 banning elephants in zoos.)

Most zoo managers are well aware of the housing requirements and the proper and diverse diet that elephants and other animals need to ensure their comfort and health. But they must also take into account the psychological and ecological aspects of the animal.

Elephants are intelligent, emotional, sensitive animals which form strong social bonds. They should never be kept alone; they must have the company of their kind. This should be taken into account when shifting elephants to other zoos, or even 'releasing' them into safari parks.

In elephant management and science we use the term 'heartbroken' - these animals actually die of 'heartbreak' and there are many such recorded deaths. Elephants also form a bond with their mahouts and it is traumatic if they are separated from their kin, be they elephants or people. Their social bonds must be understood in captive elephant care.

“Most zoo managers are aware of the housing and dietary requirements of animals to ensure their comfort and health. But they must also take into account the psychological and ecological aspects of the animal.”

(Photo: courtesy Elephantdoctor.in)



**WOMEN in ZOOS**

Once considered an exclusive male bastion, the forest and wildlife sector has witnessed the increasing participation of women across all levels. As we celebrate **International Women's Day** on March 8, this section tries to capture a small but representative sample of the many women that 'man' our zoos.

**SUDHA RAMEN**, Deputy Director, Arignar Anna Zoological Park, Vandalur, Chennai

A tall, stately young Indian Forest Service officer, Sudha has kick-started several innovations in the Arignar Anna Zoological Park. Among these is the 24x7 monitoring of animals through 180 cameras that live stream video from their enclosures to the zoo website - an initiative that has attracted more than 3.5 crore viewers. Besides providing a privileged view into the private lives of animals, this initiative causes them no disturbance. Sudha has also helped develop a zoo mobile app and spearheaded education and awareness programmes that have benefitted over five lakh students. Other remarkable achievements have been the restoration of the 16-acre Otteri Lake, which had



dried out after a period severe drought, and the development of a one-of-a-kind 'Treepedia' Mobile Application: a guide to plant species that are native to particular areas of Tamil Nadu.

**MUCHHALA ANITHA**, Deputy Range Officer, Nehru Zoological Park, Hyderabad

At Hyderabad's Nehru Zoological Park, Deputy Range Officer M Anitha is known as 'Annapurna' - 'the giver of food and nourishment' - for the immense care she takes of the over 1800



animals under her charge. She has taken pains to research the dietary patterns, habitats and habits of the animals in the zoo, and accordingly ensures that they are comfortable and

healthy. She has also helped raise awareness among women employees on issues relating to their own safety. M Anitha has received recognition for her exceptional work, including an award from the Principal Chief Conservator of Forests (HoFF), Andhra Pradesh, as well as from the Collector & District Magistrate for establishing a rural nursery under the Mahatma Gandhi Vana Nursery programme.

**SASMITA SWAIN**, Forester, Kapilash Zoo, Odisha

Kapilash Zoo serves as a rescue centre for conflict animals. Their care is particularly challenging and Sasmita has showed exemplary



courage and dedication in dealing with such animals. In 2016, she also played a key role in the crocodile breeding programme at the zoo. Once, a sloth bear escaped

when there were over 3000 visitors present at the zoo. With no tranquillising weapon available it was only her presence of mind, and that of her colleagues, which enabled the situation to be resolved without harm to the visitors or the animal. Sasmita has also shown such dedication in her earlier postings, particularly in the Kamakhyanagar West Range, which she fearlessly patrolled to stop illegal tree felling and poaching, braving attacks by miscreants.



Regional training programme for zoo keepers (northern region), held at the Lion Breeding and Safari Park, Etawah (Photo: CZA)

Discussions centred on the Master plans as well as animal collection plans of participating zoos. The long-term care of rescued animals, green practices and conservation breeding programmes were also discussed.

**(ADVETCON-2019)**, held on **November 13-15, 2019** at CSIR-CCMB & LaCONES, Hyderabad.

>> Nandankanan Biological Park, Bhubaneswar, Odisha successfully organised a **'Middle Level Officials Training Programme'** from **July 16-18, 2019** with the Central Zoo Authority's financial assistance. About 30 zoo officials from across the country participated.

>> At the **'Fourth Asia Working Group Meeting and International Seminar on Elephants Endotheliotropic Herpes Virus'**, the Central Zoo Authority announced financial assistance to veterinarians from Indian zoos that house elephants. This will enable veterinarians who are struggling with EEHV management to avail of international expertise. EEHV-HD is a fatal disease that strikes young elephants and its proper management is important as no vaccines have been developed. The seminar was held in Guwahati, Assam from **November 28-30, 2019**.

>> The Central Zoo Authority participated in the International Conference on Advancements in Veterinary Sciences for Wildlife Conservation and the 13th Annual Meeting of Association of Indian Zoo and Wildlife Veterinarians

>> A **'Nature Interpretation for Large Zoos and Safari Parks - Zoo Guide Training Programme'** was organised

Below: The 'Middle Level Officials Training Programme' held at Nandankanan; Below, top right: The EEHV management meeting held in Guwahati; Below, bottom right: Attendees at ADVETCON-2019 (Photos: CZA)

## EVENTS & WORKSHOPS

### Training Events, Conferences and Workshops Organised in the Financial Year 2019-20

Zoos are not just places where animals are displayed. They are catalysts for conservation, contribute to the science of animal care, behaviour, ecology and husbandry, and play an important role in public engagement, education, outreach and research.

roles, the **Central Zoo Authority (CZA)** organised various training events and workshops for the capacity building of zoo officials and staff, particularly to make them aware about new technologies and innovations in the field of zoo management.

Recognising the importance of upgrading the skills and knowledge of institutions performing such multiple, complex

>> The Central Zoo Authority conducted **interactive in-house sessions with zoo directors** on **May 22, 2019** at New Delhi.





The orientation workshop for zoo evaluators held in New Delhi (Photo: CZA)



Committee meeting to discuss the preparation of a '10-year Vision Plan' (Photo: CZA)

as part of the Green Skill Development Programme Certificate Course at the Kamla Nehru Zoological Garden, Ahmedabad from **November 30 to December 9, 2019**.

>> At the 35th Meeting of the Central Zoo Authority held on August 29, 2019, the CZA Chairman Hon'ble Minister Shri Prakash Javadekar had directed that a **'10-year Vision Plan'** be prepared for upgrading 10 Indian zoos to global standards, besides strengthening the CZA. In this context, the CZA constituted a committee which met on **December 9, 2019**.

>> Each year, the Central Zoo Authority organises a week-long **regional training programme for zoo keepers** at five regional centres. Each of these

programmes typically sees the participation of about 30 zoo keepers. In 2019-20, training programmes were approved at Etawah Lion Safari, Etawah, Uttar Pradesh; Kamla Nehru Zoological Garden, Ahmedabad, Gujarat; Assam State Zoo, Guwahati; Madras Crocodile Bank Trust, Mamallapuram, Tamil Nadu; and Kanan Pandari Zoo, Bilaspur, Chhattisgarh.

The training programme for the northern region was organised at the Lion Breeding and Safari Park, Etawah from **December 9-13, 2019**. Thirty-one zoo keepers from 22 zoos across seven states participated.

>> For the evaluation of zoos and to set criteria to identify the performance of zoos, the Central Zoo Authority signed



An Asiatic lion (*Panthera leo leo*) at Sardar Patel Zoological Park, Kevadiya, Gujarat, (Photo: Sardar Patel Zoological Park)

an MoU with the Wildlife Institute of India for the development of 'Guidelines, Criteria and Indicators for Management Effectiveness Evaluation of Zoos'. In this regard, the CZA conducted an orientation workshop for zoo evaluators on the **'Management Effectiveness Evaluation' framework** for zoos. The workshop was held on **December 23, 2019** in New Delhi.

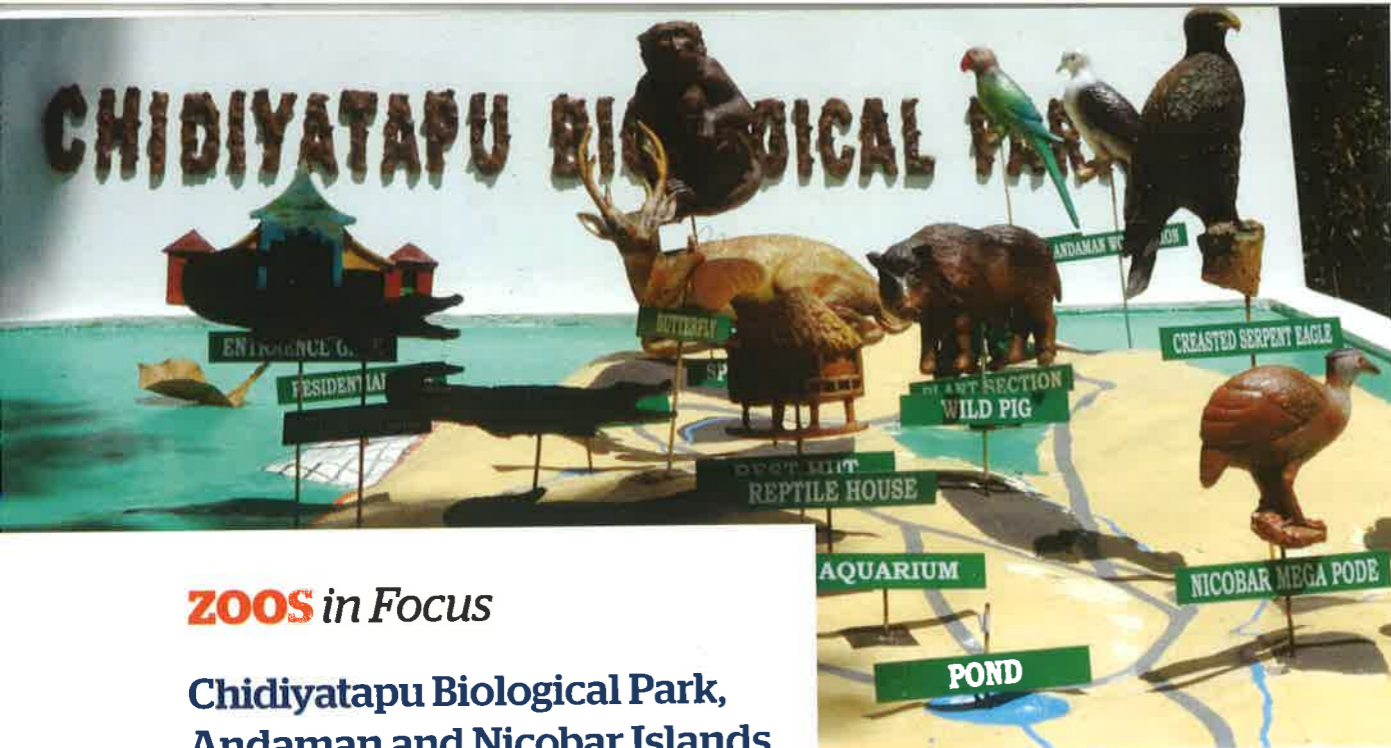
>> The Central Zoo Authority also participated in the consultative workshop on capacity building for **Animal inclusive Disaster Risk Reduction (AiDRR)**, focused on the management of zoos and animal care during disaster and zoonotic disease outbreak. The workshop was held on **January 9, 2020** in New Delhi.

### Forthcoming CZA sponsored Training Programmes

>> **Zoo Keepers Training** (Southern Region) at Madras Crocodile Bank Trust from **March 23-27, 2020**.

>> **Zoo Keepers Training** (Western region) at Kamla Nehru Zoological Garden, Ahmedabad, Gujarat from **March 20-26, 2020**.

>> **Zoo Keepers Training** (Eastern region) at Kanan Pandari Zoological Garden, Bilaspur, Chhattisgarh from **March 25-28, 2020**.



## ZOOS in Focus

### Chidiyatapu Biological Park, Andaman and Nicobar Islands

Imagine a landscape where, in the short span of an hour, one gets to see over 20 species that are found nowhere else in the world. Imagine a landscape at the edge of the country's map, a wonderland with a plethora of wild flora and fauna to be seen up close and personal.

Welcome to Chidiyatapu Biological Park. Established in May 1997, it is spread across a sprawling 40 ha campus of natural forest area that is connected with the **Mundapahar mangroves** (facing page, top left) and marine waters, providing an important link to preserve the entire southern tip of the south Andamans. Its proximity to Port Blair (around 26 km) also makes it an important tourist destination, thereby educating the island's visitors about the unique ecology and wildlife of the area.

The hallmarks of the park are its endemic species: *no exotics, no invasives*. And to top it all there are several rare and endemic free-ranging species such as the **Andaman crake** (*Rallina canningi*) and **Andaman woodpecker** (*Dryocopus hodgei*), among others, which are known to breed in the area.

The **Andaman water monitor** (*Varanus salvator andamanensis*; top right; the second largest lizard in the world after the Komodo dragon) is the star attraction, as are the **salt water crocodiles** (*Crocodylus porosus*; middle left). Human-crocodile conflict has increased in recent times and some rescued conflict animals are brought to the park before they are successfully translocated elsewhere. Besides the reptilian species, the **Andaman wild pig** (*Sus scrofa andamanensis*), **Andaman masked palm civet** (*Paguma larvata tytleri*; middle right) and **crab eating macaque** (*Macaca fascicularis*; bottom left) can be found here.

Breeding success in **Malayan box turtles** (*Cuora amboinensis kamaroma*; bottom right) provides a ray of hope for a possible restocking in the wild. Majestic equatorial trees such as **Thitpok** (*Tetrameles nudiflora*) and the relict palm-like species of the Jurassic era such as *Cycas rumphii*, remind us about the uniqueness and the fragility of the landscape.

A must see, must save Park on every zoo lovers list!





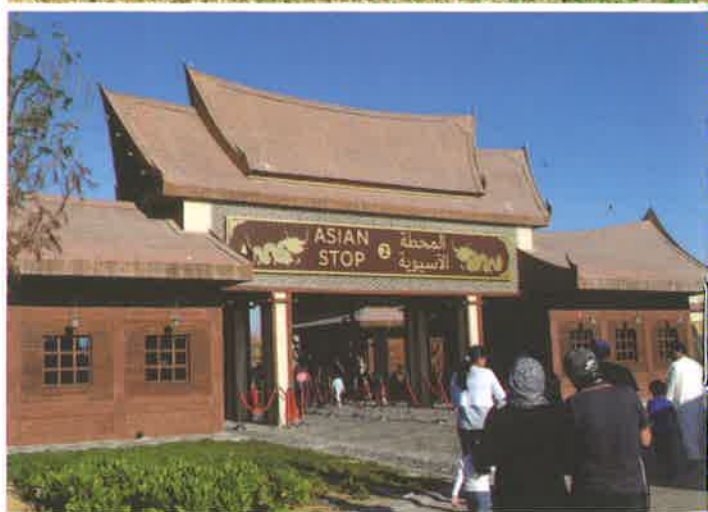
Text: Dr Anjan Talukdar, Photos: Dubai Safari Park

## Dubai Safari Park, Al Warqa'a

A vast area with lots of greenery, Dubai Safari Park is inhabited by 2500 animals from 250 species. The Park is located in Al Warqa'a, which was once a dumping ground for building waste! It is split into three main divisions, each reflecting distinct themes from around the world: the Asian Village, the Arabian Village and the African Village. Apart from these there is the Safari Village.

Designed to evoke Africa's cultural and ecological landscapes, the African Village boasts species such as the magnificent western lowland gorilla (*Gorilla gorilla gorilla*), African elephant (*Loxodonta africana*) chimpanzee (*Pan troglodytes*), pigmy hippo (*Chobopsis liberiensis*), greater flamingo (*Phoenicopterus roseus*), African spoonbill (*Platalea alba*) and white lion (a mutation of *Panthera leo melanochaita*), among others.

Similarly, the Asian Village showcases Komodo dragons (*Varanus komodoensis*), Bengal tigers (*Panthera tigris tigris*) and Asiatic black bears (*Ursus thibetanus*) among other species. The Arabian Village has Arabian oryxes (*Oryx leucoryx*), Arabian sand gazelles (*Gazella marica*) and mountain gazelles (*Gazella gazella*), Arabian wolves (*Canis lupus arabs*) and other species native to the region.



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