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The quarterly newsletter of the Central Zoo Authority, New Delhi

> Vol 4 | Issue 1 & 2 (January - June 2023) (Double Edition)



CONTENTS

From the desk of the Member Secretary

Tribute White tiger: Bhishma

Arignar Anna Zoological Park, Vandalur, Chennai Tamil Nadu

News & Events (Jan-March, 2023)

- National Zoo Director Conference.
- Biologists Workshop
- Zoo Keeper trainings
- Educator workshop
- MS Visits
- National Level Stakeholder Workshop
- Marathon at National Zoological Park
- Educational & Outreach Activities in Indian Zoos

News & Events (Apr-June, 2023)

- Educational & Outreach Activities in Zoos
- Zoo News

Species In Focus

Clouded leopard

Best practices

- Van Vihar National Park Zoo, Bhopal, Madhya Pradesh - A Plastic Free Zone
- Cyclone "Biparjoy" Threat Mitigation Measures at GZRRC, Jamnagar

Talking Heads: Journey of CZA

Sh. S.C. Sharma Founder Member Secretary, CZA

Zoo In Focus- India

Lion Breeding Center And Multiple Safari Park, Etawah

Talking Heads: Journey of WAZA

Prof. Theo B. Pagel, CEO Cologne Zoo/ Past-President WAZA

Zoo in Focus - International Zoo Zlin, Czech Republic

Zoo in History

Nawab Wazid Ali Shah Zoological Garden, Lucknow, Uttar Pradesh

PREVIOUS EDITIONS





Clouded leopard: Sepahijala Zoological Park Jaguar Trek Exhibit: Zlin Zoo, Czech Republic

28

30

32

EDITORIAL BOARD

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2

3

10

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From the desk of the MEMBER SECRETARY

Scientific management of zoos and to upgrade the captive animal welfare standards is always the priority of the Central Zoo Authority, since its inception. One of the ways to achieve the objective is having qualified and trained scientific and technical personnel in the zoo. Further, as per assigned functions of the Central Zoo Authority, it is regularly organise the training workshop for each level of zoo staff to upgrade and sharpen their skills. This issue of newsletter highlighted the various such training workshop organised by the Central Zoo Authority for the Zoo Directors, Biologists, Educators and Zoo keepers.

The International Clouded Leopard Day is celebrated on August 4 every year to raise awareness of this magnificent and endangered species of animal. Accordingly, the issue includes the fascinating facts about the species under 'Species in Focus'.

The management and maintenance of a zoo is a challenging responsibility as zoos face several kinds of disaster. Disasters are defined as situations or events which overwhelm local capacity, necessitating a request to national or international level external assistance. The coastal zoos in India faced the longest churning cyclone in Arabian Sea named as "Biparjoy" make landfall on the coast of Gujarat on June 16, 2023. One of such zoos, the Greens Zoological Rescue & Rehabilitation Centre, Gujarat which is located on the Coast of Gujarat and deemed to be in path of cyclone did an excellent job so there was no loss of life of any of the captive species and almost no damage to the infrastructure. I congratulate the zoo management for implementing disaster management policy towards safety of captive

animals, people, and infrastructure. A report was incorporated in the issue that can act as a guiding document for zoos in such disaster situation.

The issue also highlights the various zoo outreach programs being implemented by the zoos across country.

I was glad to meet Prof. Theo B. Pagel, CEO Colonge Zoo and Past-President WAZA on the occasion of the Zoo Keeper Training Workshop organized at National Zoological Park, New Delhi during March, 2023. It also gave opportunity to request him to share his experience as WAZA President to be published in the newsletter.

Similarly, the journey of the Central Zoo Authority in the eyes of the founder Member Secretary Shri S C Sharma through insight of the CZA's challenges and efforts to raise the animal welfare standards in Indian zoos through scientific management has been included in this issue.

The issue also showcased a brief about Zoo Zlin, Czech Republic and Lion Breeding Centre and Multiple Safari Park, Etawah, Uttar Pradesh. The pages from history covers about the Nawab Wajid Ali Shah Zoological Garden, Lucknow, Uttar Pradesh.

We hope that this issue of newsletter will generate awareness of wildlife protection and conservation and, also encourage the zoos to strongly face and resolve the disaster situation.

> Dr. Sanjay Kumar Shukla Member Secretary, Central Zoo Authority





Bhishma- The White tiger at Arignar Anna Zoological Park, Vandalur, Chennai, Tamil Nadu

The White tigers (Leucistic) are the charismatic attractions of the Indian Zoos. The majestic beauty of this uncommon genetic variety, with white body and black stripes with powerful sapphire eyes lures the people in.

Bhisma – The first male White Tiger of Arignar Anna Zoological Park was the "star attraction" of vandalur zoo. He was brought from National Zoological Park, New Delhi to the Arignar Anna Zoological Park through an exchange programme, when he was 17 months old.

The first white tiger cubs introduced to the zoo in 2006 were Bhisma and Anu. 14 white tiger cubs were born to this magnificent pair, Bhisma and Anu, in the ratio of 5:9. They were named as Akansha, Namrutha, Sembian, Indira, Valli, Rama, Chandra, Arjuna, Athraya, Cauvery, Chitra, Thara, Meera and Beema. In 2020, Bhisma sired with Indira and gave birth to 4 white tiger cubs in the ratio of 1:3. His cubs were exchanged to other zoos in Delhi, Mysore, Jaipur and Lucknow.





Bhisma, the largest tiger of Arignar Anna Zoological Park was attracted by the visitors. Whenever bhishma was exhibited in the yard, visitors were much happier on seeing an extremely active tiger who used the entire enclosure when he was in the yard. Bhishma walked in a distinctive way; he chose to do so, on the wall of the yard, which drew the attention of the visitors. Children were particularly enthralled when they saw him. He would walk about the enclosure without stopping. He was one of the most gentle animals who complied with keeper's instructions and was a prolific breeder, obedient, kind, gentle charismatic tiger. He was passed away on 13.07.2021. We will always remember him and his memories are still lingering in the minds of all the employees and many visitors.

2



Publication

National Conference for Zoo Directors is organized by Central Zoo Authority and hosted by Sri Chamarajendra Zoological Gardens, Mysuru, Karnataka from 18th to 19th January 2023. The focus is on "Master Planning and Building the National Capacity for Species Management & Conservation Breeding".





- ATIONAL CONFERENCE FOR ZOO D TR Common A 19° Jan Tr Zonan
- 1. Ex-Situ Updates (Volume 3 Issue 2&3) Lesserknown Taxa in Indian Zoos & Back to the Wild.
- 2. National Conference for Zoo Directors -Bhubaneswar - Report.
- Ex-situ (Vol-3, issue-4) Innovation in enclosure designing in Zoos.



Biologists Workshop

Central Zoo Authority, New Delhi and Greens Zoological Rescue and Rehabilitation Centre (GZRRC), Jamnagar, Gujarat organized a three-day workshop for zoo biologists in the MAB Learning Centre Auditorium Hall, GZRRC, Jamnagar, Gujarat from 21st - 23rd March 2023.

A total of 51 participants from 44 Indian Zoos participated in the Workshop.



Zoo Keeper training

The three-day capacity enhancement workshop for zookeepers of the northern region organised in collaboration with National Zoological Park, New Delhi from 13^{th} to 15^{th} March, 2023.

34 zookeepers from 19 zoos covering six states participated in the workshop.







Three-day regional Workshop for Capacity Enhancement of Zookeepers Eastern & North Eastern Region, organised by Zoological Garden, Alipore in collaboration with Central Zoo Authority, New Delhi from 20th to 23rd February, 2023.





Educator workshop

National Capacity Enhancement Workshop for Zoo Educators organised by Veermata Jijabai Bhosale Botanical Udyan & Zoo, Mumbai from 15th to 17th February, 2023

31 participants from 30 recognised zoos in India attended the workshop.







MS, CZA Visits

Visit to Shaheed Ashfaq Ullah Khan Prani Udyaan, Gorakhpur, Uttar Pradesh



Visit to M. C. Zoological Park, Chhattbir, Punjab







MS Visit to PFA (People for Animal Rescue Center), Bengaluru, Karnataka







National Level Stakeholder Workshop

National Level Stakeholder Workshop for the development of National Referral Centre - Wildlife and One Health collaborations was held on March 10th, 2023 at Ganga Auditorium, Indira Paryavaran Bhavan, New Delhi.The workshop was presided over by Ms. Leena Nandan, Secretary, MOEFCC, Sh. Rajesh Bhushan, Secretary, MOHFW; Sh. Subhash Chandra, CEO CAMPA and Member Secretary, Central Zoo Authority Over 50 participants from nearly 30 organisations/institutes working in the domain of wildlife health, veterinary sciences, wildlife ecology, wildlife forensics, zoos, and NGO's, attended the workshop.



Marathon at National Zoological Park, New Delhi

In association with New Delhi Marathon the National Zoological Park, New Delhi organised a Zoo Marathon for MissionLiFE, a global initiative launched by Hon'ble PM of India to rehash the country's climate change commitments ,where 2000 people participated.







Educational & Outreach Activities in Indian Zoos

Padmaja Naidu Himalayan Zoological Park (PNHZP), Darjeeling, West Bengal



30 NCC cadets from 5th Bengal Battalion visited the park on 30.03.2023 for an educational visit. The cadets were given an educational tour of the Park, followed by a discussion with Director, PNHZP.



Indira Gandhi Zoological Park, Vishakhapatnam (IGZP), Andhra Pradesh



An Awareness program was conducted on theme "Lifestyle for Environment" (LiFE)

National Bird Day, 5th January 2023.







Photography display and competition



A Treasure display features a series of mangroves species and herbarium, in a bid to further spread awareness on the value of the mangrove ecosystem by Forest Research Centre for Coastal Ecosystems.

World Wetland Day, 2nd February 2023 at IGZP



Chennai Snake Park, Guindy, Tamil Nadu



College programme with Gurunanak College (20th January, 2023)



World Wetland Day events with Gurunanak College (2nd February, 2023)

Bhagwan Birsa Biological Park, Jharkhand



World Wetland Day 2023, 2nd February, 2023



Second birthday celebration of Chimp- "RAJA"

Nandankanan Biological Park, Bhubaneshwar, Odisha





Herping Trail at Nandankanan, 26th February, 2023

Celebration of other days by PNHZP



Maharaja Martand Singh Judev White Tiger Safari & Zoo, Satna (MP)





World Forestry Day 21st March, 2023

Pilikula Biological Park, Mangaluru, Karnataka



170 Students took part in various activities on the occasion of Wildlife day celebration (March, 2023)



Ecobrick making - visitors joined in and collected plastics wrappers and bottles and made eco-bricks out of them (January, 2023)

Madras Crocodile Bank Trust, Tamil Nadu

Reptile awareness project for over 1000 government school students on 21st March, 2023.





NEWS & EVENTS (Apr - June 2023) Educational & Outreach Activities in Zoos

NANDANKANAN BIOLOGICAL PARK, BHUBANESHWAR, ODISHA

Nandankanan Biological Park is one among premier large Zoos of India located amidst beautiful natural surroundings spreading over an area of 362.1 Sq. Km in the outskirts of Bhubaneswar. The Zoological Park was dedicated to public on 29th December, 1960. The undulating topography with natural moist deciduous forest, water bodies and enchanting landscape provides the zoo inhabitants an appropriate ambience to live in harmony with nature.

The mission of the Biological Park is to achieve the distinction of an outstanding zoo through World Class Conservation, Education, Research and Exciting Visitor Experiences by connecting people to biodiversity conservation.

World Veterinary Day (29.04.2023)





World Environment Day (05.05.2023)





World Otter Day (31.05.2023)





World Parrot Day (31.05.2023)





Arignar Anna Zoological Park, Vandaluru, Tamil Nadu

Arignar Anna Zoological Park, Zoo school create a sense of place, that allows people to be inspired by nature and understand the importance of preserving it for the future. These connections have the potential to change attitudes towards nature and help people imagine wildlife and humans existing in harmony with each other. During the month of April to June, the Park has much utilize its potential of building more education events as April/ May month are the peak seasons for crowd level will be high on the occasion of summer vacation.



Zoo ambassador programme

Zoo ambassador programme-Summer camp was organized during April-May, 2023. For the comfort of the students, the camp was well planned before the peak During the session, the students summer season. explored mammals, birds, reptiles, butterflies, and various functions and activities of the zoo and learned through field based learning. Students were taken all around the zoo to visit various exhibits, Otteri lake, aviaries, serpentarium. When zoo ambassadors, visit the wetland bird aviary and the Otteri lake, they understand the value of protection of the natural habitat. Assignment worksheets were given to the students, who discussed their learning with their parents and friends and completed them. At the end of the programme, the top officials of the zoo interact with the students, and the students feel so honoured to share their learning experience with the top officials of the management. The programme has provided the best overall learning experience for the students and is continuously gaining overwhelming responses from teachers, parents and students.

Mission Life (Lifestyle for environment Campaign)

Arignar Anna Zoological Park hosted the Mission Life campaign #lifestyle for the environment from May 5th to June 5th. In this campaign, over 20,000 participants were sensitized through over 150 awareness programs. In this campaign, the zoo has conducted public awareness sessions through talk shows, street plays, cycle rallies, walkathons, lectures, webinars, cleanliness drive, social media promotions, and promoting the campaign through emails and SMS. Promoting through the zoo website and attempting to sign up for the pledge on mission life practices.



Training session

Arignar Anna Zoological Park acts as a medium of instruction for the new recruits of the Forest Department of Tamil Nadu and other states to learn the modern and scientific management of zoos. During the abovementioned quarter, the 51st batch of forester trainees from Tamil Nadu Forest participated in the three-day training programme in AAZP. Trainees were exposed to the various functions and duties of the forest range within the zoo. And the challenges faced in the work and the way it was effectively handled by the management. The training also emphasized enclosure design, animal care, CZA guidelines, rescue, public facilities, and education.



Zoo outreach

An outreach event was hosted at the National Integration Camp organized by the Ministry of Youth Affairs and Sports, Government of India, at Crescent College of Engineering. 250 NSS students were sensitized on the role of NSS volunteers in recovering the planet from humanmade disasters. The talk emphasized real-time information about the planet's environment and the strength of NSS volunteers contributions in recovery of the ecosystem and making the earth a safe place for the next generation.







Patna zoo to get new inmates from Mysuru & Assam soon



World Wildlife Day 2023: 5 Rare And Exotic Wildlife Species Found In India

dia is an unparalleled home to an

258 animals, birds given to other facilities from Junagadh zoo in 2 years



Tigress Raksha gives birth to 3 cubs, takes white tiger count in Maitri Bagh Zoo to 9

a 2005 in 25 States, espe



Mizoram: Aizawl zoological park exhibits two new Royal **Bengal tigers**



azing and exotic creatures. Although the etv of unusual animals, many of them are in

Raipur: With the birth of three cubs to tigress R sha and tiger Sultan, the number of white cats has increased to nine at Maitri Bagh Zoo of Twins City Bhilai, around 40-km from state capital Raipur.





Animal adoption scheme at SV Zoo Park in need of a big push



Rajkot zoo successfully breeds ostriches as 3 chicks hatch

lakker Haug Zoo in juna goth laid ncoer. The pair



In a line, the Rejort Sociegical Park (E27) successfully treet three chicks in a successful and the transmission of the successful successful to the Rejord Maria and

18 lions sent to various zoos in two years AA 🔁 #### 01



Annexative The scalar government has been were a manife from more the Sakerbacy Zoo in Junagach to veloce 2006 across the ocurrity, the state government that the house on Tuesday. The government stated that 5 lions we moved from Sunagach 200 in 2001 and three were shifted in 2002

Thiruvananthapuram Zoo officials help inmates to beat the heat



THRUVANANTHAPUBAM: With the mercury rising across the state with the onset of sur animals at the Thuruvananthapuram Zoo are also feeling the heat. To help the minates h tes here.





104

Share



Bokaro zoo eyes upgrade, to add more animal species soon



upgrade the dity zoo, also known as JawaharLal Nehru Biological (INB) Park.

Patna zoo gears up to keep inmates cool Faryal Rums/Act?2.020.0843 57



Final active city sizzes unaer solaring temperatures, the automose of samply candib adological parks, commonly known as bithat 2004, have general up to take special measures to protect their aumatin from the exettering have. From installing up water privilexes to puting up cool node, the automoties are taking all precautionary measures to keep the immates cool and hydrated during the summer.

Byculla Zoo opens underwater viewing gallery of reptiles



Visitors at the newly opened enclosure at the Byculla Zo

Leo and Nayla say 'hello' to Thiruvananthapuram zoo

Leo and Nayla were transported from Tirupati in separate cages and are currently adjoining enclosures as they are not set familiar with each other



By Express News Service THIRUVANANTHAPURAM: The zoo in the state capital has recently become home to two majestic lions, further enriching its diverse collection of animals. Leo, a six year-old hybrid Bhupender Yadav releases two white tiger cubs in Delhi zoo enclosure

(B) PI



Social age can with the more after they were released to paths wowing it the area of white age exclusion of Social Park by Onion Minister Int Environment Poren and Climate Change Blogender Vielary in New Della. That edge

Tirupati Zoo gets 14 new inmates

eaking to EXEE, Zoo Curator C Selvary, sold, among the 14 entitudy that came to 5V29 or in new addition.



Ry bigrens Herei Jernier

THURATE The Sri Verkateswaru Zoological Park (SVZP) in Timpriti got 14 new annates from Kampur Zoological Park under Antimal Exchange Programme (AEP).

Crocodile Trail Makes a Splash at

Mumbai's Byculla Zoo With Underwater Viewing Deck

Assam zoo gets two zebras, Joy and Joya from Mysore, giraffe from Patna



Hyderabad's Nehru Zoological Park Installs Coolers, Sprinklers and Rain Guns to Help Animals Beat the Heat



§derabad coo ramps up summer preparation

and foggers to protect animals from soaring temperatures.

More animals arrive at Pilikula

TNN / Apr 12, 2023, 08:33 IST



Mangaluru: As per the animal exchange programme between Rajkot Zoological Park and Pilikula Biological Park, which was approved by the Central Zoo Authority, new species of birds and animals arrived at the Pilikula Biological Park on Tuesday.

Bokaro zoo gets new inmates

The 162-year-old Veermata Jijabai Bhosle Botanical Garden & Zoological Museum launched a

Divy Khare / TNN / Updated: May 3, 2023, 1218 IST



The renovated public aquarium is being inaugurated in Bokaro zoo on Tuesday

BOKARO: Residents, particularly children, have a reason to smile with the opening of the renovated public aquarium in Bokaro zoo on Tuesday. Additionally, the leopard family at the zoo has expanded with the arrival of two male members, which uses reduced for the forester forest Parally? Blockson Birs Biolanded Rajkot's Pradyuman Park zoo gets new reptiles, animals TNV/Updated.Apr 19, 2020. 1334 (57



RAJKOT: Visitors coming to the Pradyuman Park Zoo of Rajkot, the second biggest in the state after Junagadh's Sakkaarbaug, have reasons to spend more time here.

Several new animals and reptiles have been brought here from Pilikula Biological

Park, Mangaluru and Rajiv Gandhi Zoological Park, Pune.



13



Clouded leopard (Neofelis nebulosa)

Text:

Ms. Natasha S Vashisth, TA, CZA Dr. Devender Kumar, EMO, CZA Photo: Sepahijala Zoological Park

The Clouded leopard (Neofelis nebulosa), commonly known as Lamchita (Bengali), Ghodaphutuki bagh (Assamese), Pungmar (Lepcha), Kung (Bhotia), Amchita (Nepali), Kelral (Mizo) is classically considered a single species (iucnredlist.org/species/14519/198843258), has been split into two species. Based on analysis of mitochondrial DNA, microsatellites and morphology, Neofelis nebulosa is restricted to mainland Southeast Asia, and N. diardi is found on the islands of Sumatra and Borneo (Buckley-Beason et al. 2006, Kitchener et al. 2006, Wilting et al. 2007). The subspecific classification of species needs further analysis (Kitchener et al. 2017). In addition to the nominate form two subspecies of Mainland Clouded Leopard have been described: N. n. macrosceloides (Hodgson in Gray, 1853, pl. 38) from Nepal, Northeast India, and Bhutan and (the presumably extinct) N. n. brachyura (Swinhoe, 1862, 352, pl. 43) from Taiwan. However, the recent review of wild cat taxonomy felt there was insufficient evidence for these two subspecies and proposed to keep N. nebulosa as monotypic until there was further evidence for sub specification (Kitchener et al. 2017).

Recent research has proposed the Clouded leopard branched from other members of the Pantherinae family first—over 6 million years ago—making them the most ancient feline species in the modern cat world (nationalzoo.si.edu). While more closely related to big cats, the Clouded leopard is frequently described as bridging the gap between big and small cats largely due to its smaller stature (nationalzoo.si.edu). While all species of cats are classified as one family, the Felidae, genetic research has shown the Clouded leopard to be most closely related to the large cat species.

Clouded leopard is a medium-sized felid with distinct cloud-shaped patches on their pale-yellow to browncolored fur that help them to camouflage in dense forests. Due to its forest habitat, Clouded leopard have large, dexterous paws with specialized footpads for gripping branches. Specialized anklebones allow varied position for climbing, including climbing headfirst down trees (nationalzoo.si.edu). Another distinctive feature of the Clouded leopard is its long canine teeth. These canines are longer in proportion to skull size than those of any other species of wild cat. It has an exceptionally long thick tail, with black ring markings. The tail can be as long as the body and is used for balancing. Black and pale, whitish individuals have been reported from Borneo indicating the species may exhibit dark and albino forms.



14



The geographic range of the species spread across the south east Asia from the Himalayan foothills in Nepal, Bhutan and India to Myanmar, southeastern Bangladesh, Thailand, Peninsular Malaysia and to south of the Yangtze River in China. It is locally extinct in Singapore and Taiwan. In India, they are found in northeastern states which includes protected areas in Sikkim, West Bengal, Assam, Arunachal Pradesh, Meghalaya, and Mizoram.

In terms of biology and behaviour very little is known about Clouded leopard due to their elusiveness, so most information comes from captive individuals only. It is reported to live upto 11 years in wild while in captivity, it lives 16-17 years. Clouded leopards are predominantly nocturnal with crepuscular activity peaks. They are adapted to both arboreal and terrestrial modes of life. The females are slightly smaller in size in comparison to males. Males weigh up to 50 pounds (23 kilograms) while females weigh usually 25 to 35 pounds (11 to 21 kilograms).



The average home range of male is 30-50 square km and for females the home range is 25-40 square km. Clouded leopards are believed to be solitary, except when breeding or accompanied by cubs. Because of the nocturnal and the arboreal behaviour of the species no reliable data is available about its population in wild. However, the IUCN estimates its global population is less than 10,000. Estimation on the basis of available habitat its population in India may not be more than 500. The pelt of Clouded leopard and its head, teeth and claws are used for decorative purposes. Its bone and meat are used as substitute to tiger bones and meat in Asian medicine system. The available reports suggest that about 300 Clouded leopards were poached in India between 1998-2010. It is protected under Schedule I of the Wild Life (Protection) Act, 1972, and listed as Vulnerable under **IUCN Red List.**

Clouded leopards are predatory carnivores with a diverse prey base. In captivity Clouded leopard are mostly fed with 500g - 1 kg of meat once daily for 4-6 days in a week,





with the provision of one day fasting. The quantity of the feed might change as per the age, sex, health conditions or body weight of the animal. Feeding of 1.3 to 1.5 kg of dressed chicken was found to be adequate in captive condition (Standardization of Animal Diets in Indian zoos, 2013).

Breeding in Clouded leopard takes place round the year in the wild i.e. there is no fixed mating season. The age of Clouded leopard at first reproduction in case of both males and females is average 26 months with gestation period 93 +_ 6 days and litter size 1-5, most often 3. The kittens are totally blind at the time of birth and weigh about 140 gm to 280 gm. They have solid dots and completely dark colour body when born. The mother weans the kittens with milk until they are between 7 and 10 weeks old. At 10 months of age, the kittens leave their mothers to find their own territories. Clouded leopard was taken into an Indian zoo in 1992 in Assam, followed by a male in Sepahijala in 1996. The Wildlife Institute of India, 2014, also reported the housing of Clouded leopards at zoos in Kanpur (in the year 1994) and Patna (during 1996-2003). A single female Clouded leopard was also once housed in Jaipur Zoo, Jaipur, Rajasthan from the year 1995 to 2000.

The Central Zoo Authority (CZA) initiated the Conservation Breeding Programme for Clouded leopards in the year 2010 by designating Sepahijala Zoological Park, Tripura as the coordinating zoo for the Clouded leopard conservation breeding programme and Assam State Zoocum-Botanical Garden, Guwahati, Assam as a participating zoo for the programme. The Central Zoo authority has provided financial assistance to Sepahijala Zoological Park, Tripura for the construction off-display



The reports cited the housing of Clouded leopard in captivity since the early 1900s around the world, and the first zoo birth was reported in the 1950s. In the year 1989, the Clouded leopard Species Survival Plan (SSP) was formed which addressed issues regarding captive management, stabilization of the population, genetic management, and development of conservation efforts in the Clouded leopard's range countries. With respect to Indian zoos, Acharjyo & Mishra, 1981; Acharjyo & Patnaik, 1990, reported that the Nandankanan Zoological Park, Odisha received one female Clouded leopard in April 1966 from an animal dealer in Calcutta. An adult female Clouded leopard lived 13 years, 9 months, and 12 days in captivity at Nandankanan Biological Park, Odisha from the year 1966 to 1980 and died at the age of about 15 years (Acharjyo & Mishra, 1981). Further, it was reported that at Ahmedabad in the year 1985, 2 specimens of unknown sex and origin were came in captivity, which survived there for 7 years, i.e., from 1985 to 1992. According to the Wildlife Institute of India, 2018, the wild-caught male enclosure for Clouded leopard under Conservation breeding programme. As of March 31, 2020, in India, a total of 03 number of Indian zoos housed 13 number of Clouded leopards. There are 6 (4:2) individual Clouded leopard at Sepahijala Zoological Park, Tripura under conservation breeding center during the year 2021-22. The Sepahijala Zoological Park, Tripura has carried out the study on the 10 Clouded leopard wherein different behaviours of the Clouded leopard has been studied during the year 2018.

The first rescue of the Clouded leopard by the Sepahijala Zoological Park, Tripura was reported in 1992 (named Nandan), and between 2005 and 2015, six individuals were rescued from the wild and included in the breeding programme. As per the report submitted by the zoo to CZA there are three number of successful pairs named 'Nandan-Reshmi', 'Jiten-Pratibha' and 'Prasanta-Smriti' and reported the birth of total 29 cubs in captivity (as on 2018). The rescued male (two) and female (two) Clouded

16

leopards at Sepahijala Zoological Park, Tripura have contributed to the maximum number of births and no captive-born male has been reported to be a successful breeder in captivity. At Sepahijala Zoological Park, Tripura, the Clouded leopards are fed with local country fowl of average 2 kg on every alternate day during evening. There are two open moated naturalistic enclosures of size 500 m2 and 1500 m2 for Clouded leopard at Conservation Breeding Center (CBC) of Sepahijala are present. Different kinds of environmental enrichment such as logs, wooden platform, adequate vegetation etc. are provided by the zoo.

The Wildlife Institute of India, 2018 mentioned a total 59 (30:26:3) individuals in the historical population out of which only 10 individuals (3:7:0) were reported to be breeding individuals. There is a decrease in the founder number also with 5 founder animals as of March 31st, 2018. The population retains 82.53% of the genetic diversity (limited genetic diversity) originating from 5 founders and founder genome equivalents of only 2.86 wild-origin individuals (Wildlife Institute of India, 2018). Further, an unequal representation of founders in the population has been reported with a population mean kinship of 0.175 that depicts a cause of concern. According to Srivastav & Nigam (2009), low fecundity levels and poor survival rate of offspring produced in the captive population of Clouded leopards at Indian zoos, a cause of concern which may be due to improper housing and/or husbandry of Clouded leopards. Presently, 13 individuals are housed in 4 zoos that fall within its distribution range in India.

The Sepahijala Zoological Park, Tripura became the first zoo in India to have so far bred this species in captivity

which may be due to the better stock position of the species, adequate housing facilities, experienced staff/ officials, good mate compatibility, and also because the zoo falls in the natural habitat area of the species. The zoos at Itanagar, Darjeeling, and Aizawl have acquired Clouded leopards from Sepahijala Zoological Park in the past but no breeding takes place at any of these zoos.

In order to conserve the species in captivity several issues need to be addressed like acquisition of founder base, mate compatibility, adequate housing and upkeep facilities for the animals, experienced staff etc. Besides, the housing of Clouded leopards in zoos especially those zoos falling in the natural habitat regions of the species should be adequate in nature with good husbandry management alongwith the pairing of lone/ single-sexed animals.

Some of the Fascinating facts about Clouded leopard

- Only feline specie which can hunt pheasants and other flying birds.
- Only medium sized cat which prefers arboreal living than terrestrial living.
- They have the longest upper canine teeth in comparison to skull size of any living carnivore.
- Clouded leopard has short legs and strong paws with flexible joints, designed for climbing on the trees.
- They are agile climbers, able to jump from one branch to another in a split of a second (especially when they hunt the prey). Long tail is used for balancing while climbing.
- It can jump 1.2 meter height.





An eco-friendly environment is crucial for us to live a healthy life. Clean environment promotes a healthy atmosphere while conserving energy. The primary cause for the drastic change in the natural environment is pollution. Environmental pollution occurs in different forms. Air pollution, light pollution, noise pollution, soil contamination, radioactive contamination, thermal pollution, visual pollution, and water pollution are all major types of pollution. Pollution cause by plastic has a significant impact on the environment. Plastic waste is currently one of the most serious environmental issues. The man-made polymer which has found use in every aspect of human life has become a necessary evil. The plastic waste is keeps emulated in the environment as long cannot be degraded. Since 1964, the world's plastic production has increased twenty folds. If current trends continue, output will double in twenty years and double again by 2050.

These are some facts that will surprise humanity. Every day, India generates 26,000 tonnes of plastic waste. One plastic bag is used only for 12 minutes on average, but a single plastic bag can last up to 1,000 years. Every minute, one million plastic bottles are purchased around the world. 400 million tonnes of plastic are produced globally. 1000 years - time required for plastic bags and styrofoam containers to decompose. Each year, plastics cause \$13 billion economic damage to the world's marine ecosystem. At least 267 species are affected by plastic debris globally, including 86% of sea turtle species, 44% of seabird species, and 43% of marine mammal species.

Plastic is harmful for wildlife as well as human kind, each human consumes 100 microplastics per meal, or 70,000 bits per year. Plastic production and incineration emits more than 850 million metric tonnes of greenhouse gases into the atmosphere. Over 60 countries have enacted bans and levies to reduce single-use plastic waste. China, Indonesia, the Philippines, Vietnam, and Sri Lanka account for 60% of all plastic waste in the oceans.

Because plastics are not easily degraded and are very stable in the ambient environment, their disposal in the environment has currently created serious pollution problem. Plastics waste management is currently a major environmental issue. For the disposal of plastic waste, several strategies have been implemented, including recycling, landfill deposit, incineration, microbial degradation, and conversion into useful materials.

Plastic recycling is an expensive and time-consuming practise due to the collection, sorting, and processing of waste plastics, and the low quality of the recycled goods limits their wide application. Land filling takes up productive land and makes it unfit for other uses. Waste plastic incineration and pyrolytic conversion emit hazardous atmospheric pollutants such as polyaromatic hydrocarbons, CO_2 (greenhouse gas), and persistent organic pollutants such as dioxins.

Waste plastics constitute a notable portion of the solid waste dumped into the environment, and their quantity is rapidly increasing as plastics become more widely used. The devastation caused by 'Plastic waste' on our environment is well documented. Plastic waste has encroached on every available space in our lives, polluting the environment and posing serious health risks in the process.

According to the Central Pollution Control Board report, the largest contributors of plastic were Delhi, Mumbai, Chennai, Bangalore, and Hyderabad. Instead of plastic, we can use natural materials such as plantain leaves, butea



monosperma (Plas tree) leaves, palm leaves, and so on. Though the government and various organisations have taken numerous steps and initiatives to make India plastic-free, what the country really needs is for each individual to contribute in their own way.

Van Vihar at the centre of the city Bhopal has taken a step towards sustainable lifestyle by banning singe use plastic. Van Vihar is declared as a plastic free zone. Visitor are not allowed to enter with single use plastic such as plastic water bottle, plastic bags etc. They are seized and fined if they are found using them inside the park. Visitors are asked to deposit their single use plastic materials at the gate. To provide the visitors with the drinking water facility. Van Vihar management has installed water ATMs at strategic location. The visitors are given with an option to buy a reusable thermos-steel water bottle at the gate. The water bottles provided to visitors by depositing a caution money which is refunded back on returning. Water ATMs are equipped with the supply at pure and cool water which can be utilized by dropping a coin.

With these efforts and with the cooperation of well aware visitors, a step has been taken to save the wild animals of Van Vihar from plastic pollution and its ill effects. The awareness created will go a long way in changing the lifestyle of human being.









19

Cyclone "Biparjoy" Threat Mitigation Measures at GZRRC, Jamnagar

Text & Photos: Vivaan Karani, CEO, Dr. Brij Kishor Gupta, Director, Dr. Ajay Deshmukh, Dr. Nanvnath Nighot, Dr. Ankush Dubey, Dr. Boon Allwin, Dr. Nikita Salian, Veterinary Officers, Ajay Kartik, Curator (Reptiles), Naman Dani, Facility In-charge at Greens Zoological Rescue and Rehabilitation Centre, Jamnagar, Gujarat (Email: gzrrc@outlook.com)



Satellite image of Cyclone Biparjoy taken between 5:00 pm to 5:26 pm on June, 2023

iparjoy, one of the longest churning cyclones in the Arabian Sea, was forecast to make landfall on the coast of Gujarat on evening 15th June 2023. In preparation the local administration of India and Pakistan shifted more than 30,000 people to safe shelters. The India Meteorological Department categorised Biparjoy as a Category 3 storm with windspeed ranging between 120 to 196 km per hour. Based on certain forecasting models, the Greens Zoological Rescue and Rehabilitation Centre (GZRRC) was deemed to be in the path of the cyclone. Hence GZRRC immediately implemented its disaster management policy and initiated all steps necessary to secure the safety of its animals, people and infrastructure. This report summarises the post-cyclone report of the threat mitigation measures undertaken by GZRRC to minimise the impact of the thunderstorms that ensued due to the landfall of Cyclone Biparjoy on the eve of 16th June 2023.

Disasters are defined as situations or events which overwhelm local capacity, necessitating a request to national or International level for external assistance.

The disaster management programme of GZRRC entails a continued integrated process of planning, organising, coordination and implementing measures which can aid in minimising the effect of the Cyclone on GZRRC facilities.

- A. Mitigating or minimising the threat posed by the Cyclone by advanced preparation.
- B. Capacity-building of staff to stay prepared against all emerging exigencies due to the Cyclone.
- C. Assessment team to conduct site-readiness evaluations and compliance with the disaster management plan to deal with any exigencies.
- D. Quick response team and advanced communication team to prepare for any exigencies.
- E. Optimisation of resources and mitigation of risks associated with the cyclone.
- F. Facilitate the resumption of normal activities.
- G. Identify areas of further improvement in case of future emergencies.

Spread across 568 acres, GZRRC has more 17 facilities constituting to the zoo, rescue centre, quarantine centres and conservation breeding programmes for various threatened fauna. All facilities are well connected by a world class road network. Each site at GZRRC has its very own security infrastructure, which is further complemented by the security infrastructure of GZRRC, thus providing a two layer security system that provides protection against any exfiltration or infiltration.



Challenges posed by the Cyclone

The Greens Zoological Rescue and Rehabilitation Centre is located in Jamnagar which is located 131 km from Dwarka where the Cyclone Biparjoy was scheduled to make a landfall on 15th June 2023. Due to the location of the zoo near a cyclone prone area, the GZRRC already had a disaster management protocol in place that was geared to deal with any exigencies.

- The risk of injuries (fatal or non-fatal) in housed animals and staff was one of the biggest concerns for GZRRC.
- Cyclones are likely to cause a significant amount of infrastructure damage, which would pose a large opportunity cost for GZRRC.
- The risk of animal escapes from GZRRC facilities to adjoining facilities and enclosures leading to injury to staff and animals.
- The risk of destruction of infrastructure that could hinder normal functioning of the zoo and its facilities.
- The risk of destruction of adjoining infrastructure due to unsecured material from GZRRC.
- Flooding
- Weakening of infrastructure that could lead to future damage and repair costs.



Wooden planks installed to prevent damage to glass barriers

Cyclone mitigation measures incorporated in the design of GZRRC

Due to its location, GZRRC has been designed to be resistant to earthquakes, thunderstorms, flooding and cyclones. Some of the salient features of GZRRC facilities to prevent against cyclones is discussed below.

The GZRRC facilities are designed to ensure that animal welfare is never compromised. Hence all enclosures are equipped with night shelters that have enough space and provide the animals ample opportunities to express species-typical behaviours while indoors. All night shelters have their very own HVAC system that can simulate the naturalistic temperature conditions required to maintain the species in homeostasis. All facilities at GZRRC are built to prevent damage from natural disasters which includes Cyclones and earthquakes. Additional steps were taken to ensure that all infrastructure and facilities were safe and secure from storm damages.

Additional Mud pumps were deployed to prevent flooding inside enclosures. A team of horticulturists ensured that all trees within and outside the enclosures were trimmed and reinforced. All glass barriers were secured with wooden planks to prevent escape of animals and avoid unnecessary injuries.

Design and construction

All enclosures and night-shelters are designed to withstand gale force winds and provide safe-refuge to animals as well as keepers. There are separate quarters attached to night houses where keepers can take shelter in case of an emergency. The HHVAC system of the keeper facility is separate from that of the animals. Biosecurity measures are put in place to ensure that keepers are not exposed to any pathogens while taking care of animals.

Staff safety protocols

All staff members are trained on the disaster management protocols of GZRRC as a mandatory part of their boarding probationary period. Monthly mock drills and training drills are conducted with all pertinent safety equipment to hone the learnings. Every site has access to emergency safety equipment to tackle any emergency, which includes fire fighting equipment, emergency animal rescue, human rescue, emergency medical equipment and other safety gear.



Light flooding post-cyclone at GZRRC

- Y poles
- Large nets
- Anti-bite gloves
- Plastic stick
- Binoculars
- Head lamps
- Mega phones
- Animal carrying rug

- Bolt cutters
- Chainsaw
- Aluminium ladders
- Ropes of various length and diameters
- Flashlights
- Fire extinguishers



Emergency equipment distributed to all site specific staff to mitigate the threats posed by Cyclone Biparjoy



Emergency evacuation protocols

GZRRC has well-defined evacuation plans and all staff are trained about the same along through regular training and mock drills. All enclosures were furnished with adequate transport cages so that animals could be shifted to safe locations in case of any structural damage to existing housing facilities. The staff are also trained on emergency rescue and fire drills to mitigate the risk of injury among the personnel.

Emergency backup power supply

Zoos require large amounts of water, food and power to operate under normal conditions. During Cyclones and other natural calamities, regular supply of fresh water, power and feed may be interrupted or halted. Hence it is crucial to have other standalone sources of power supply that can act as an emergency backup until normal services are resumed. GZRRC facilities have backup power generator facilities that can provide emergency power backup for HVAC systems, water pumps and cold storage chains.

Emergency Pharmaceutical supply

The following veterinary medical supplies were procured and distributed across all sites to ensure that all veterinary teams were equipped with necessary prophylactic and therapeutic medications. Tranquilliser guns were secured and adequate darts along with medications were available at accessible secure facilities across sites, with quick response teams and veterinary teams.

Communication system and Control room

A central control room equipped with the latest communication system consisting of mobile network along with radio transceivers constitute the communication system at GZRRC. All site supervisors and head keepers carry official mobile phones with all pertinent numbers on speed dial along with a radiotransceiver that has ten channels of communication to the control room and other pertinent service facilitating inter and intra-site communication. The central control room ensures that all sites are coordinated in their efforts to prevent the impact of cyclones on GZRRC. The control room allows for the optimisation of resource utilisation across all sites. Additionally, the Control room ensures that all sites receive the same instruction via single chain of command to avoid confusion during emergencies.



Additional steps taken by GZRRC to mitigate the threats of Cyclone Biparjoy

A. At the onset of the Cyclone preparedness programme, the following key stakeholders were identified from each site, who would lead the programme and conduct necessary operations as per the disaster management plan in coordination with the control room.

- 1. Veterinary officers and curators.
- 2. Animal keepers and supervisors.
- 3. Security team
- 4. Carpenters, welders and helpers.
- 5. Ambulance coordinator
- 6. Ambulance team
- 7. Drainage team equipped with mud pumps and gully suckers.

8. Warehouse and inventory team



Specialised mud pumps acquired and installed at GZRBC

- 9. Refuelling team for vehicles and electrical backup.
- 10. Animal feed management and supply team
- 11. Horticulture team equipped with chain saws and other equipment necessary for trimming trees and conducting safety checks on trees.
- 12. Management team audited all cyclone preparations.

B. All the above mentioned teams were tasked to audit all facilities and provide comprehensive reports on possible weaknesses and resolve the same within a limited timeframe.

C. Separate site-wise plans were developed based on the unique location of the site in relation to the coast (orientation). Vulnerable structures were identified and secured. All construction was halted across sites and all construction materials were secured or shifted to secure facilities.

D. For 24 hours preceding the landfall of the cyclone, all



Large nets deployed to prevent flying objects from damaging enclosures and injuring animals

animals were brought indoors. The only exceptions were large herbivores and other herd living animals. Large windbreaks were installed across all herbivore enclosures and nets were deployed to prevent large flying objects from breaching the enclosures. Animals that were housed inside the retiring cells were furnished with cognitive enrichments and could view the paddock through the glass viewing area inside each night shelter. The HVAC system and drainage system ensured that the animals were comfortable during the prolonged stay inside the retiring cells.



Naman Dani, Facility-In-charge at Leopard Rescue Centre briefing the animal care takers.

Rescue and Outreach efforts of GZRRC to provide relief to surrounding areas

GZRRC has been founded on the principles of global biodiversity conservation through animal welfare and people empowerment. In consonance with that goal, GZRRC provided relief support to adjoining areas via veterinary relief camps. GZRRC Veterinarians, support staff and vehicles were available and prepared to meet any veterinary medical emergency arising due to the cyclone. GZRRC was in constant contact with the local administration, forest department office and police headquarters regarding the developing situation of the cyclone.

Post-event evaluation

A comprehensive post-event evaluation has been conducted to assess the resiliency of the infrastructure and the feedback of the unground staff regarding the scope of improvement of the same. 50 keepers across all sites along with site supervisors, curators, veterinarians participated in a on ground post-event evaluation exercise and filled the post-event evaluation. The significant outcomes from the post-event evaluation are shred as follows.

Preparedness and planning

- GZRRC staff executed the disaster management plan on the ground effectively which resulted in minimal loss in property or life.
- Our office comprehensively perused the cyclone emergency plan of GZRRC and found it more than adequate to tackle any or all emergencies arising out of the incoming cyclone.
- The cyclone preparedness and disaster management plan clearly outlined the plan of action for all stakeholders in case of any emergencies.
- A clear chain of command was established to ensure that there was minimal chance of communication errors during the said emergency.
- The entire management team constituting of director, assistant directors, and curators along with veterinarians regularly audited the compliances with regard to cyclone preparedness and disaster management plan of GZRRC.
- All aspects of the compliance were regularly reviewed and any exigencies arising from the same was addressed immediately.

Early Warning System

GZRRC implemented multiple modes of communication across all sites and facilities to ensure that there was a clear mode of site-specific instruction relayed through a single chain of command. This included providing timely and accurate information about the cyclone and site wise wind speeds. The staff upon interview highlighted that the clear communication of evacuation routes and other safety instruction was crucial in realising the zero-injury policy of the organisation.The early warning system of GZRRC complemented with the efficient communication tools ensured that all staff were adequately updated.

Animal Health and Welfare

Animal health and welfare is the top priority of Greens Zoological Rescue and Rehabilitation Centre. All animals except for the herd living herbivores were brought inside for the duration of the storm. GZRRC staff used positive reinforcement based conditioning techniques to create a positive rapport with the animals allowing the staff to shift the animals by hand signals without resorting to tranguillisation. Due to the good keeper-animal relationship promoted as a policy at GZRRC, animal welfare is never compromised. All animals that were brought indoors had access to food, water, and conspecific interactions. Appropriate storm-resistant shelters were provided to group-living herbivores to protect them from the inclement weather patterns. All night shelters at GZRRC are pre-equipped with a highly functional HVAC system and automated water bowl fillers. Each night house has its very own deep freezer, that is used to store food-based enrichment devices that were periodically provided to animals to keep them engaged and stimulated. Emergency evacuation protocols along with transport cages, ambulances and transportation vehicles were made available at each site.

Summary

Due to its unique location Greens Zoological Rescue and Rehabilitation Centre enjoys a mild maritime climate for most parts of the year. However, this location also makes it vulnerable to Cyclonic events during the onset of summers. According to meteorologists, Arabian Sea Cyclones are going to become more frequent and severe in the coming years. Therefore it is important for GZRRC to have a robust cyclone threat mitigation plan which is constantly updated to meet the challenges posed by the vagaries of ever changing weather patterns. GZRRC prides itself on the unique design of its infrastructure and facilities that suffered close to no damage during the severe thunderstorms that occurred as consequence of Cyclone Biparjoy making a landfall on 16th June 2023. More importantly, GZRRC's cyclone threat mitigation policy and disaster management plan was executed by well trained on-ground staff, which further minimised the damages and resulted in no injuries to any staff member or animals housed at GZRRC. GZRRC will use the learnings from this event to improve its policies and provide better training to its staff and offer better protection to its animals.

23





Shri S. C. Sharma Founder Member Secretary, CZA

Q. 1. What were the objectives of the creation of the Central Zoo Authority?

Ans. I want to share with you the circumstances that led to the creation of the Central Zoo Authority. Prior to 1991, Setting up zoos was free for all businesses. There were no enforceable norms for the housing and upkeep of zoo animals. Some of the renowned zoos of the country were keeping some species of wild animals locked in dingy cages for years giving hardly any space for their movement and exercise. Providing animals adequate space for movement and exercise and the opportunity to enjoy open air and sunlight was a concern. I remember having inspected zoos with a hectare or so area and displaying 50 to 60 species of wild animals. The word "Zoo" had become a synonym for cruelty. It is also used as a derogatory word, often pointing to a "place where everything is in a mess". The shocking fact was that the State Government was the biggest operator of zoos.

The Government of India was advising the State Governments to bring a qualitative difference in zoos and develop them as centres of wildlife conservation. But for four states, the State Governments paid no attention to the advice of the Ministry of Environment and Forests. The ministry even launched a centrally sponsored scheme entitled "Assistance for Development of Zoos" under the VII Five Year Plan with an outlay of Rs 150 lakh. But there were no takers. But for Hyderabad Zoo, no other zoo took advantage of the scheme. Thus, it was amply clear that short of statutory provisions for housing, upkeep and health care, no measure would bring a qualitative change in the working of the zoos. Side by side, it was also clear that statutes alone cannot bring the desired changes. Reimbursements of the expenditure incurred on the upgradation of the infrastructure for zoo security and housing, health care and upkeep of animals by the Central Government would also be necessary. What was important was the monitoring of the execution of the improvement plan execution on the ground. The task involved a lot of technological inputs from subject matter specialists. This necessitated the creation of an organisation totally responsible for improving the country's zoos. The wildlife managers of the country who were responsible for the management of zoos at the country level were not open to the idea of creating an autonomous organisation for overseeing and regulating the management of zoos in the country. They wanted to keep control of zoos but were unwilling to grant them the priority they deserved. Fortunately, Maneka Gandhi, an ardent lover of animals, became the State Minister in charge of the Ministry of Environment and Forests. Improving the zoos was a very high-priority item on her agenda. She quickly picked up the idea of creating an independent body overseeing and regulating the management of zoos. She shoved a proposal in this regard in the draft "Wild Life (Protection) Act Amendment Bill" submitted by the wildlife division for her approval. The Additional Secretary of the Legislative Department of the Law Ministry drafted a detailed concept of the authority. The bill was placed before both houses of Parliament and was duly passed. The members welcomed the proposal for the creation of the authority. After getting the President's assent, the bill passed by the Parliament was notified as the "Wild Life (Protection) Amendment Act 1991. Section 38-A of the Act authorises the Central Government to constitute a body to be known as the "Central Zoo Authority "------ The Authority shall have a chairperson, such number of members not exceeding ten and a Member Secretary. The provisions of the Act came into effect in January 1992. The Ministry of Environment constituted the Central Zoo Authority on 03-02-1992. Thus an autonomous authority, "Central Zoo Authority, came into existence. This development was very well received in the country.

Q. 2. Who were nominated as members of the authority and how did you get associated with it?

After Narasimha Rao's Government came into power, Shri Kamal Nath took over the Ministry of Environment and Forests. He was keen to have as wide representation in the "Central Zoo Authority" as possible. As such, only four officials were taken Ex-Officio members of the authority viz Secretary Environment and Forests, Inspector General of Forest, Director Wildlife Institute of India, and Director Indian Veterinary Research Institute of India. Amongst non-officials, there were three males and three females. Discipline-wise distribution was -two zoo experts, one eminent welfare organisation, one eminent veterinarian, one wildlife activist and one generalist. I was appointed as Caretaker Member Secretary in lieu of the regular Member Secretary to be appointed in my capacity as Joint



Director of wildlife in the ministry.

Q. 3. How were your early days as Member Secretary in the meeting of the authority?

I started drafting the "Recognition of Zoo Rules " soon after the issue of the notification of the constitution of the authority. It was a difficult task and the I.B.W.L Expert Committee 1973" report proved quite handy in accomplishing the task. I also took advantage of the Zoo Rules of the United Kingdom and "The Zoo Recognition Rules" of the United States Zoo Association. Once the "Zoo Recognition Rules" draft was ready, I requested Shri Kamal Nath, the Minister of Environment and Forest and the Chairman of Central Zoo Authority, to give a date and time for holding the Authority's First Meeting. Shri Kamal Nath surprised me by putting a condition that the meeting shall be held in the office of the Central Zoo Authority. By that time, we had no clue as to where the office was going to be. However, knowing fully well that he meant what he said and did not change his decision easily, I started the search for the office. Fortunately, half of the barrack at Bikaner House was vacant. With the help of Secretary of Environment & Forest, Shri Raja Mani, that half barrack was allotted to the Central Zoo Authority; Now it was the question of furnishing the office within such a short period. The process involved getting the grants for that year released from the ministry and opening an account of the authority with the bank to remit the cheque for the grants issued by the ministry. The process must be completed to draw the money required to purchase furniture and other fittings. The task was accomplished with the guidance and kind support of Shri Hasurkar, Joint Secretary; furniture and other fittings were purchased and fixed once that was done. Somehow, by the time of the meeting, we were ready to receive the chairman in the first meeting. Still, I was quite uncomfortable as, despite my best efforts, there were many inadequacies left, and the meeting room was not befitting to the status of the minister. But Shri Kamal Nath was very happy at Central Zoo Authority getting its office. The meeting was transacted in a very congenial environment. The draft rule was briefly discussed. The authority also released grants for Rs 53,40 lakh to ten major zoos in the country. Thus my early days at the Central Zoo Authority eventuated a very positive outcome for the Central Zoo Authority.

Q. 4. Was the draft Zoo Recognition by you also approved in the first meeting?

Certainly not. The rules were briefly discussed. The members asked for a detailed discussion on the rules pointing out that the rules are going to be the main plank of the functioning of the authority. Chairman agreed with the views expressed by the members. He authorised the Secretary of Environment and Forests to have special meetings of the authority and finalise the draft rules for consultation with Zoos. The discussions on the rules lasted for 3 or 4 meetings. All the experts gave their inputs, which were taken into account, and then the finetuning of the language of various provisions was done. The draft rules were finalised under the stewardship of Sri Raja Mani, Secretary of the Ministry of Environment and Forests and Shri Dey, Additional Director General. Both have great experience in drafting complex rules supporting legislation, and they also kept a keen eye on the final language of every rule. Once they were satisfied, the draft rules were circulated to the Directors of all the zoos, Chief Wildlife Wardens of all the states and the Forest Secretaries. They were requested to send their comments and suggestions on the draft rules within a specified time. The suggestions received were carefully examined, and appropriate suggestions were incorporated into the draft rules. The entire process took more than four months. Then the final draft rules were approved by the Chairman and submitted to the Ministry of Environment and Forests for approval and notification. After getting the rules vetted by the Ministry of Law Affairs, the ministry issued a notification of the rules. The copies of the notified rules were also placed in Rajya Sabha and Lok Sabha for the information of the members.

Once the rules were finalised, the authority issued a notification requiring all the zoos to make applications for grant of recognition in a prescribed format, with a prescribed fee before the expiry of 180 days of the Act coming into force, i.e., before the end of July 1993

Q. 5. What was the number of existing zoos when "Zoo Recognition Rules" came into effect, and how did you decide which zoos should continue to operate and which should be closed?

More than 400 applications were received by the authority for grant of recognition as zoos. About 100 of them were really not zoos. They were either bird dealers or personal animal collections. We carried out a detailed evaluation of more than 300 zoos owned by various organisations, individuals and government departments. Chairman Shri Kamal Nath was very clear in his approach. He directed that the Authority should have an enabling approach, not a disabling one. Every Zoo should be given a chance to come to the standard prescribed by the rules. Only such zoos should be asked to close those that have no desire to improve or where there is no scope for improvement. The basic rule was that every Zoo must provide the animals with housing, upkeep and health care. They have to either come to the prescribed standards or perish. The first round of evaluation of all the zoos that had applied for recognition took us a period of three years. About 125 zoos, which were located on a very small piece of land, and there was no scope for their improvement, were refused recognition and closed down. The rest of the zoos were also not up to the prescribed specifications, but the scope for improvement was there. They were given a period of 3 years to redress the inadequacies. Those who complied were allowed to continue. In all, about 200 zoos were closed down. The number of recognised zoos was around 180.



Now came the question of providing grants to zoos to enable them to comply with the conditions stipulated in the letter of recognition. The responsibility of meeting the cost is of the zoo operator/owner. Hence the Central Government / Central Zoo Authority was dutybound to provide funding for improvement only to the government-owned zoos. Zoos other than governmentowned zoos had to comply with the statutory conditions from the resources of the zoo operator/zoo owner, were by and large owned by corporate bodies and had their own sources of funding. Some zoos were run by colleges/charitable organisations having their own resources. No individual-owned zoo qualified for recognition by the authority. These were either mobile zoos carrying some animals on a bullock cart or a small collection of a few animals housed in very dingy cages. Amongst the later category were some hotels. Personal collections of individuals that were not being exhibited to the public are not covered under the definition of the Zoo. These were regulated vide other sections of the Act, subject to the legality of acquisition.

Q. 6. How successful are the zoos in mustering public support for the conservation of wildlife?

Ans. The Central Zoo Authority has been endeavouring to provide the zoos with the necessary guidance, technical inputs, and financial inputs to enable them to pass on the conservation message to the visitors of the zoos. However, proper interpretation facilities have not reached the desired level in most zoos. The primary reason for this is the shortage of interpretation staff. Some of the zoos are doing good work and passing the right message to the visitors. The interpretation facilities in all the zoos need upgradation. In foreign zoos, zookeepers' talks are the main plank of interpretation. We also need qualified and trained zoo keepers. Other interpretation facilities in zoos need to be upgraded. If properly conducted, the visit to a zoo definitely inculcates amongst the zoo visitors that initial spark of love and compassion towards the animals that may keep them motivated to support the cause of wildlife conservation in the later part of their life.

Q. 7. How successful has the Central Zoo Authority been in furthering the cause of the Conservation of Endangered species?

Ans. The Central Zoo Authority, from day one, has been endeavouring to ensure that zoos are able to establish self-sustaining populations of physically, genetically, and behaviorally healthy animals for display to the public. Zoo's problem is that they have too many animals of some species. The efforts of the Central Zoo Authority are directed at planned breeding of the later category to achieve the goal stated above. A list of endangered species with too few animals has been prepared, and coordinating zoos and participating zoos have been designated. 100% funding is being provided to the coordinating Zoo for the upkeep and healthcare of the

26

animals of such species. For monitoring the zoo animals "Laboratory on Conservation of Endangered Species of Wild animals "has been established at Hyderabad. The laboratory is also helping zoos in assisted reproduction of endangered species.

Zoos are also encouraged to take up planned breeding of endangered species to augment the depleting in-situ wild population of such species. The basic requirement here is to avoid human conditioning of the captive-bred stock. A coordinating and few participating Zoo have been designated for the conservation of each of such species. A financial grant is provided to the coordinating zoos for the construction of breeding centres away from the display area. Funding is also provided for hiring the curatorial staff and meeting the feed costs.

Appropriate arrangements for healthcare are also made. As a result, the coordinating zoos have been able to raise adequate numbers of clouded leopard, snow leopard, red panda, golden langur, Nilgiri langur, lion-tailed macaque, mouse deer, pangolin and various species of pheasants. However, the coordinating zoos are not ready to share the captive-bred animals under the programme with the participating zoos. This has blocked the further progress of the breeding programme. Several species have been successfully bred and reintroduced into the wild, viz. Red panda, Mouse deer, Pygmy hog, White humped Vulture.

The efforts for building up the sustainable population of various species to meet the demand of zoos for display have not been successful to the desired extent due to the following reasons:

- 1. The focus of the zoos is having for display as many species as possible. They are reluctant to limit their collections only to the species that can thrive well in the prevailing environmental conditions of their Zoo.
- 2. Most of the species in the collection of zoos are not represented by viable numbers. These species are represented by lone pairs of animals. If one animal dies, the Zoo is left with a single animal
- 3. There is too much craze for exotic animals, as such zoos like to send the animals of endangered species to foreign zoos instead of sharing them with their counterparts.
- 4. State Governments are keen on creating new zoos instead of improving the existing ones.

Q. 8. What specific measures have been taken for the welfare of the animals housed in zoos?

Ans. There is a specific provision in Recognition of Zoo Rules, 2009 that every enclosure shall be designed having due regard to the biological behaviour of the species and the number of animals to be housed therein. Adequate safeguards have been taken to avoid overcrowding of animals in any enclosure. Even the food given to the animal is decided, taking due care of the behavioural needs of the animals. Potable water remains available around the clock, and due care for maintaining health and hygiene is also taken.

Q. 9. How is the Central Zoo Authority ensuring that zoos are working in synergy with the environment?

Ans. Necessary provisions have been made in the guidelines for the preparation of a "Master Plan of Zoos" for providing efficient waste disposal systems and sanitation facilities in Zoos. The zoos are also required to maintain proper hygiene and cleanliness in the Zoo. There is a provision in Recognition of Zoo Rules, 2009, which makes it mandatory to provide facilities for vermin-compost, recycling and disposal of effluents and solid wastes in a manner that causes the least adverse environmental impact. Support is also provided for solar lights.

Q. 10. What is the contribution of the Central Zoo Authority in ensuring the welfare of rescued animals?

Ans. The Central Zoo Authority takes special care to ensure that every animal rescued, in whatever way, gets due care. The biggest achievement in this regard was the rehabilitation of mammals rescued from circuses. We received 212 lions and 96 tigers from circuses. Five rescue centres were created to accommodate these tigers and lions. The details of these centres are as follows-

Name of the Rescue Center	Housing Capacity for Tigers	Housing Capacity for Lions
Arignar Anna Zoological Park	40	20
Banerghatta Zoological Park	80	20
Vishakhapatnam Zoo	40	20
Tirupati Zoological Park	40	20
Nahargarh Zoological Park Jaipu	ır 30	20
Total	230	100

More than Rs 13 crores were spent on the construction of the rescue centre. The expenses of feeding, upkeep and health care for their lifetime must have cost more than Rs 30 crores.

Rescue centres were created to house more than 200 rescued panthers in various zoos. A bear rescue centre was also established at Bannerghatta Zoological Park. Some panther rescues were created in other states as well.

Q. 11. What made you remain associated with the Central Zoo Authority and zoos for such a long

Ans. Even before assuming charge of the Member Secretary of the authority, I was actively involved with the management of zoos in my capacity as Director of Kanpur Zoological Park and Joint Director of wildlife. I found working with zoos to be very rewarding. One can see the results of the efforts made by him in a very short time. Saving the lives of some seriously sick animals or seeing the animals under your custody in good health gives immense intrinsic pleasure. My tenure as Member Secretary was the happiest period of my life. To see dingy zoos like Surat, Rajkot, Indore, Gwalior, and Bellary develop into spacious and well-designed zoos gives me great pleasure. I had seen a chimpanzee rescued from a circus in a very pitiable condition with sores all over his body. It was cured by the sincere efforts of the zoo staff of Arignar Anna Zoological Park. My hats off to those members of the Class-IV staff of the Zoo who worked round the clock in earnest to save that chimpanzee. More than that, the keen interest taken by Chairman Shri Kamal Nath, Late Rajesh Pilot, Captain Jai Narayan Nishad and Saifuddin Soz in the affairs of the authority kept me motivated. Last but not least, it was the love and regard of my successors. My association with the authority and zoos could continue mainly because of them.

I would be failing in my duty if I did not thank the staff of the authority for their wholehearted support. To begin with, I had only three contract people. On the first day in the authority, I had just two persons to assist me- Bans and Jha. Still, they maintained the show. Slowly more people joined, and the same trend continued. Everyone was putting his best. Even after my relinquishing the post of the Member Secretary of the authority, I continued to get the same regard and support from them. It continues even 20 years after my retirement. I wish every staff member of the authority the very best in life.

Q. 12. How do you see the future of zoos?

Ans. Upkeep and healthcare of zoo animals is a specialised science. The availability of qualified and experienced curatorial and veterinary staff is the key to the success of zoos. Unfortunately, this need has not been realised by policymakers, particularly by finance people. In their eyes, the work of a zoo keeper is only cleaning the enclosure and feeding the animals. The most crucial part of the keeper is to observe the behaviour and biological activities of the animals. These inputs are crucial for the successful breeding of wild animals. Suppose zoos are to meet the expectations of the people. In that case, it is crucial that we have appropriately gualified and trained zoo keepers who can record and report their observations to the veterinarian and the scientific staff in a proper format. Filling up the posts of curators is essential for the success of zoos.. The practice of keeping staff on contract is counter-productive and marks the initiative of the person concerned. The finance department should sanction the post required, and the persons serving long years should be regularised. This principle should apply to the Central Zoo Authority also. If these requirements are met, Indian zoos will have a very bright future.





Lion Breeding Center and Multiple Safari Park, Etawah: An Effort to Replicate bye Gone Era

The Lion Breeding Center & Multiple Safari Park is located in the historical "Fisher Forests" situated on Etawah-Gwalior Highway, about four kilometers from Etawah town. In 1884, the erstwhile District Magistrate of Etawah, Mr. JH Fisher was able to convince the Zamindars of the area to voluntarily hand over the ravines area of 1146.07 hectares to the Government so that it could be saved from further soil erosion and degradation of land. Accordingly, the area was ploughed and seeds of Babool (*Acacia nilotica*), Sheesham (*Dalbergia sissoo*), and Neem (*Azadirachta indica*) were sown and the area was closed for animal grazing.

The growth of Babool was so encouraging that in 1912, Allen Cooper Company of Kanpur was attracted to take the entire land at a lease rent of Rs. 2.50 per hectare per year for a period of 50 years. This company commercially exploited the Fisher Forests till the year 1914. But just after two years the company handed over the lease to the forest department with a liability of Rs. 2,500 as the cost of the lease and Rs. 2,382 lease rent to be paid to the Zamindars annually. In this way, Fisher forest came under the control of the Forest Department since 1914.

After taking over the fisher forest two kinds of activities were undertaken by the Forest Department in the following years; firstly, construction of check dams to prevent soil erosion and secondly, plantation and seed sowing of appropriate species. In course of time, broad leaved forests were established in the area. However, due to high biotic pressure, the broad leaved species gradually deteriorated, and eventually the area ended up being severely eroded and degraded. In the year 1985 and subsequent few years, broadcast sowing of *Prosopis juliflora* was undertaken. As a result, the density of *P. juliflora* increased and the area was converted into a



P. juliflora forest with sporadic occurrence of other species.

SAD AND CRUEL HISTORY

As per fables the Asiatic Lion (Panthera leo persica) once roamed and reigned all over northern, western and central Indian forests (from Hindukush to Bay of Bengal and up to Narmada river). The historical records indicate that in northern India, the last area held by the migrating lion was the forests in Yamuna river catchment until medieval times as the Mughal emperors shot lion in Shivalik foot hill forests (now Saharanpur forest division) and Aravali range forests around Delhi. As per imperial gazetteer of India (United Provinces of Agra and Awadh





volume 1-1908) the last specimen of lion in this area was killed at Sheorajpur in Allahabad now Prayagraj district in 1864. As a result of rapid population growth , increased man-animal conflict coupled with depleting prey base only a small population of Asiatic lions remained in the wild, at Gir Forests of Gujarat in southern Kathiawar peninsula.

BEGINNING OF NEW ERA

From conservation point of view, the establishment of Lion Safari is serving the dual purpose of *ex-situ* breeding of Asiatic lions as well as replicating a wild population of the bye gone era in its former range of habitat, though in captivity but nearly free. Apart from lion safari other safaris such as antelope, deer and sloth bear safaris have also been established in the premises covering about 125 hectares. These species are associate species of lions. They not only enhance the visitor value of the safari but also spread the message of close association of different species in conservation of wildlife.

This area has major biodiversity in it with about 400 floral species, 226 bird species, 65 species of butterflies, 50 species of moths, 20 species of reptiles and about 20 species of mammals which are also major attraction for nature enthusiasts and visitors.

MAJOR ATTRACTIONS

Lion breeding center and Lion safari: For *ex-situ* breeding of Asiatic lions a near natural breeding center of international standards has been established and successful attainment of adulthood by ten cubs is enough to unfold the success story. To spread the message of conservation of lions a separate safari of fifty hectares with three animal houses has been established in a fenced area. These houses are used to keep lions comfortable with each other in order to make prides. Visitors can see pride of lions in natural conditions while sitting inside vehicles provided by safari administration.

Visitor's facilities: Safari presents wonderful and interesting world of structures resembling ancient buildings. As soon as the visitors enter the eco zone the structural architecture gives them a feel of an old abandoned town amidst tall boulders and undulating forest area. The two huge statues of male lions at the main gate and the ancient ruined bridge made of stones attract everyone. 4D theatre, pride rock and lushgreen ravine landscape, enhances the visitors experience. Clean toilets and sufficient seating arrangements are also available for the convenience of the visitors. The administration keeping convenience of visitors in view has adequate number of vehicles to visit multiple safaris.



TALKING HEADS : JOURNEY OF WAZA

Prof. Theo B. Pagel, CEO Cologne Zoo/ Past-President WAZA

1. What are the challenges faced by you when you became president of WAZA?

When I became President of the World Association of Zoos and Aquariums (WAZA) we had to move our office from Switzerland to Spain, we had to establish a new office team and find a new CEO for WAZA. We luckily found Dr Martin Zordan who is leading our office team very professionally and successful. Openly speaking we had to solve some financial problems as well. But we overcame all challenges and WAZA has again become a strong and highly respected partner for many, such as the IUCN, CITES, etc. And of course we are the global umbrella for scientifically managed zoos and aquariums around the globe. WAZA as a think tank develops the important strategies which we all can use as our guidelines and benchmarks.

2. What are the strategies and initiatives taken by you in the upkeep of zoos across the world?

Beside the steps mentioned above, there were several important developments during my term as WAZA president. WAZA published two useful strategies: Protecting our Planet – The WAZA Sustainability Strategy 2020-2030 and Social Change for Conservation — The World Zoo and Aquarium Conservation Education



Strategy. Both are very inspiring papers. The last one was worked out in cooperation with the International Zoo Educators Association). This again shows how cooperative WAZA is, always looking for synergies and improvement.

WAZA

World Association of Zoos and Aquariums

19 - Analysis

And we were able to intensify our cooperation with the International Union for Conservation of Nature (IUCN). For the very first time we not only attended the IUCN World Conservation Congress, but were visible with a pavilion. And for the first time WAZA supported a candidate for presidency, Razan Al Mubarak from the UAE, the new president of the IUCN.

We even started the partnership and initiative Reverse the Red (RtR) at the congress in Marseille. Reverse the Red ignites strategic cooperation and action to ensure the survival of wild species and ecosystems. Our common goal is to provide the tools and partnerships to unite stakeholders and catalyze conservation impact. Together we want to reverse the current negative trends in species survival highlighted by the IUCN Red List of Threatened Species and Ecosystems. Within Reverse the Red we therefore create Centers for Species Survival (CSS) to catalyze our effectiveness and hopefully will run the first World Species Congress in 2024. And of course we want to create a movement which brings the importance of biodiversity for humankind to the peoples mind.

3. Your views on how the zoos all over the world are progressing in terms of scientific management towards animal upkeep, healthcare and Conservation breeding etc.

My vision for modern, scientifically managed zoos is that we will become more and more important. We will lead by example and our conservation/conservation education work, but nevertheless research and our expertise in keeping and breeding animals in human care under best practice will inspire people and help to save biodiversity.

For this reason, we need to improve further and on a global level across borders, cultural backgrounds. And even if we are all facing different problems, if we use the strategies offered by WAZA and with the support of our management structure through our regional associations, we will step forward globally in animal welfare, success of our work and therefore in acceptance.

4. What aspects of animal welfare do you think should be inculcated into zoo functioning all over the world?

We all are meanwhile aware of the Five Domains model. In 1994 Prof David Mellor and Dr Cam Reid proposed this

model. These Five Domains are nutrition, environment, health, behavior and mental state/experiences. But there are other models as well. I think we need to try the best we can do for the welfare of the animals in our care.

One of the biggest steps in the last decades are the improvement in veterinary medicine but also the use of behavioral enrichment. Animals in our care must be able to show natural behavior. And we have improved a lot through enrichment, modern zoo architecture and professional. But every day we are learning more and we should improve constantly.

5. We would love to hear more about your experience in zoo management and your advice for zoos as a Center of Conservation, Education and Innovation (Best practices/innovative ideas) etc.

I am totally convinced that modern scientifically managed zoos and aquariums are education and conservation centers already.

We need to work hard that our guests and the societies recognize that. The names zoo and aquariums have to be positively charged.

Without our work several species would have disappeared already from our planet. And with our growing breeding programs, cooperation with IUCN and other partners, such as the World Wide Fund For Nature (WWF), we live up to our role.

Within my own Zoo, Cologne Zoo (Germany) we have learned that we need to talk much more about our work. Many people are not aware of what we are doing in conservation and/or education. We teach also at Cologne University, means from children up to adults we not only teach but try to inspire people to take care of the planet. We all need biodiversity.

We will establish a Center of Species Survival within the Reverse the Red initiative and charge a so called



conservation €. Means one € per adult ticket goes directly to conservation.

And we are active within our national, regional and the global association – being a member of such associations is of benefit for each institution and the community.

We even are a member of the IUCN and several of my staff are active within the Specialist Groups of IUCN. But there are many possibilities for every zoo to be involved more or less intensive in such themes – try it. Look for the right partners for your institution. Live the One Plan Approach (OPA) of the Conservation Planning Specialist Group (CPSG). You probably know that the OPA is the development of management strategies and conservation actions by all responsible parties for all populations of a species, whether inside or outside their natural range. Together we make a difference and save biodiversity.







Zlin Zoo, Czech Republic

About Zlín Zoo

Zoological Gardens & Chateau in Zlín – Lešná (abbreviated as Zlín Zoo) is located in the east of the Czech Republic. In 2022, 800,000 people visited the zoo, making it one of the five most visited tourist destinations in the country. Part of the zoo is set in an English-style park surrounding a picturesque late 19th-century chateau. The zoo is actually a natural biopark divided into four sections based on continents, where animals are kept in large mixed-species groups in spacious exhibits.

Cooperation between the Zlín Zoo and India

Although India and the Czech Republic are separated by thousands of kilometres, this does not prevent cooperation between the zoo and the Central Zoo Authority (CZA). It was established in 2009, making it possible to initiate breeding programmes based on the exchange of animals and carried out in partnership with Indian zoos. Mysore Zoo became the first example of this with their spot-billed pelicans then sent to the Czech Republic; for the other direction of traffic, a total of 48 individuals of ten species were transferred from the Czech Republic to Mysore between 2009 and 2019.

Over the years, the zoo in Zlín was not the only one benefitting from the collaboration with India. For instance, a pair of sloth bears arrived in Zlín from Mysore in 2015. This not only returned the species into the Czech Republic after a 20-year break but the male and female – Druva and Saraswathi – have also become an important addition to the captive population in Europe, including through the two cubs breed and reared with success.

In this respect, the transport of two pairs of gaurs from Mysore to Zlín in 2019 was even more significant, as their arrival – the first animals to be imported from India to Europe in 60 years – saved the European population of this large bovid from decline. The extremely challenging transfer was made possible thanks to the professional approach of the Central Zoo Authority and the Mysore Zoo staff.

The opposite direction – Zlín to India – was chosen for white-winged ducks in 2022. This time, Zlín has teamed up with the Assam State Zoo. In India, the white-winged duck – one of the most endangered duck species – is only found in the wild in Assam. The two pairs bred and reared in Zlín (in 2017 and 2018) are expected to help boost the captive population. Other joint projects are in the pipeline, whether for the lesser adjutant stork or the brown fish owl. In the case of the former, Zlín Zoo is working with the CZA and Indian zoos to help save the European captive population. Worldwide, there are only 13 institutions keeping the stork; in Europe, Zlín is the only holder and the only site to have had breeding success in the last twelve months, with a chick hatching at the end of March. The brown fish owl is also part of the zoo's plans for the future.

New Exhibits

The Zoo in Zlín has more than 220 species of animals on an area of 77 hectares. In 2022, a jaguar exhibit was opened called Jaguar Trek, Europe's largest facility for this species, which, in addition to a large outdoor enclosure covered with a steel net, features a large natural pool where jaguars regularly forage, demonstrating that moving in water is a natural part of life for this carnivore; this also makes the pool a top visitor attraction.

The Bay of the Rays is another exhibit that sets the Zlín Zoo apart from other European zoos, as the animals – Omani cownose rays – can not only be observed in their large pool, but also touched and even fed. This places the display among the most popular tourist sights in the Czech Republic.

Zlín Zoo continues to develop year by year. Since 2018, the Karibuni project has been emerging; stretching over 21 hectares of newly acquired land, it will take the visitor to the Central and West African region. In terms of exhibit concept and design, however, it will completely differ from conventional facilities of this kind. Karibuni will belong mainly to animals. Instead of standard zoo design, it will offer an attractively looking natural biopark that is as animal-friendly as possible. In addition to the natural setting, which will make the guest feel like in Africa, the complex will offer accommodation in perfectly furnished tents to experience a safari adventure.

As part of the first stage, an elephant breeding facility has already been completed. It is one of the three largest projects of its kind in the global zoo community. Not only will the elephants – as well as their keepers – have an impressive amount of space, but they will also be able to benefit from a range of modern techniques and technologies. In addition to a total of 3,600 square metres of indoor space, the adjacent outdoor enclosure provides over four hectares for the animals to enjoy.



Conservation

The zoo's conservation activity strives to fulfil one of the most important missions of modern zoos: keeping and breeding endangered species and returning them to the wild. Forwarding the vulture offspring for release into the wild is an example typical of this. The project started back in 2009 when Zlín joined a collaborative project of Bulgarian and Spanish conservationists associated in Green Balkans and focusing on releasing griffon vultures back into still intact mountain areas in Bulgaria. The background for this move was successful natural reproduction of this vulture – as well as other vulture species – running in the zoo grounds, making the Zlín Zoo a very special example of success in Europe in this regard. In March 2017, Bulgarian colleagues recorded the first nesting of vultures in the Central Balkans in almost 50 years when a female bred and reared in Zlín back in 2012 formed a pair with a male from Spain and laid its first egg. In terms of numbers, a total of 17 griffon vultures, 2 Egyptian vultures and 1 cinereous vulture were sent to Bulgaria by 2020



Sloth bear enclosure



African elephant enclosure







The Bay of the Rays



Jaguar Trek Exhibit



Gaurs at the Zlín Zoo



Notes 35

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Leopard enclosure constructed in 1925 at Lucknow Zoo

Lion enclosure constructed in 1925 at Lucknow Zoo



ZOO IN HISTORY Nawab Wajid Ali Shah Zoological Garden, Lucknow,Uttar Pradesh

Text & Photo: Aditi Sharma, Director Nawab Wajid Ali Shah Zoological Garden, , Lucknow

Nawab Wajid Ali Shah Zoological Garden, Lucknow, widely known as Lucknow Zoo. This zoological park was established on November 29,1921 to commemorate the arrival of the Prince of Wales to Lucknow. The idea of establishing Zoological Gardens at Lucknow poured out from Sir Harcourt Butler, the then Governor of the State and it was received enthusiastically by the prominent landlords and the leading citizens of the State who donated generously for the construction of animal houses and cages and also presented animals and birds for display from time to time. A Committee of management was set up consisting of contributors and other prominent citizens. Colonel Fanthorpe, Commissioner of Lucknow was appointed as the first President and Sheikh Maqbool Husain as first Secretary of the Commission. The complex was established in the 18th century by Nawab Nasiruddin Haider, the then Nawab of Awadh as a mango orchard. At that time it was known as Banarasi Bagh. Even today, in the colloquial language, the locals call it Banarasi Bagh. In the evening by the Nawabs, as the evening of Awadh used to be famous, a Baradari was built to sit here, which is still situated in the middle of the zoological garden with all its grandeur and dignity. This Baradari has also witnessed the making of many films. In this Baradari, the famous song of the film "Umrao Jaan", "In Aankhon Ki Masti" was filmed. Recently, a song from the film "Jan Nisar" was filmed in this. After the Nawabs, it remained a favorite place of the British. Even during the British rule, the nobility used to spend their evenings. After the establishment of zoological park in 1921, a total of 26 buildings along with cages were constructed at a total cost of Rs. 2,08,800 during the period from 1921 to 1926 in the premise. The main gate was constructed in 1936 and at that time it was named "Sir Ludovic Porter Gate". The Committee was registered under the Societies Registration Act on the 17th August 1926. Mr. Lintle Bogla, M.C., and Chief Engineer of the Lucknow Improvement Trust designed the layout of the Zoo along with its buildings and cages. In the year 1950, the Managing Committee was disbanded and an Advisory Committee was formed with the Secretary to Govt., U.P., Public Health Department as its Chairman and the Director of Medical & Health Services, Uttar Pradesh as Ex-Officio Administrator. In 1966, the administrative control was transferred to the Forest Department and the

Advisory Committee was also re-organised with Secretary to Govt., U.P., Forest Department as its Chairman and the Dy. Chief Conservator of Forests (Planning) as Ex-Officio Administrator. From time to time, the reorganization of the Zoo Advisory Committee was done and presently the new Zoo Advisory Committee, constituted vide Government order No. 1652/14-4-2001-866/93 dated 04-08-2001, is under existence. The new Zoo Advisory Committee consists of the Forest Secretary to the Govt. of Uttar Pradesh as Chairman, Principal Chief Conservator of Forests. Uttar Pradesh as Vice Chairman and Chief Wildlife Warden, Uttar Pradesh as Administrator. The Director of the Zoo is the Member Secretary of the newly constituted Zoo Advisory Committee. The Uttar Pradesh Govt. vide letter No. 1552/14-4-2001-30/90, Van Anubhag-4, dated 04 June 2001, changed the name of "Prince of Wales Zoological Gardens Trust, Lucknow" to "Lucknow Prani Udyan". Its name changed by Uttar Pradesh Govt. vide letter No. 1211114-4-2015-838/2015, Lucknow, Van Anubhag-4, dated 07 July 2015, changed the name of "Lucknow Prani Udyan" to "Nawab Wajid Ali Shah Prani Udyan, Lucknow". The Uttar Pradesh Government, under Section-5 (1) and (2) of Charitable Endowments Act, 1890 and vide their G.O. No. 6716/14/3-94/76, Van Anubhag-3, dated 31-01-1978. formulated a new management scheme for the management of the Zoo which is effective since 1st Feb. 1978. The management of Lucknow Zoo is being done as per this Scheme of Management.



Central Zoo Authority

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