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UPDATES



केन्द्रीय विज्ञानपर: प्राधिकरण
Central Zoo Authority



जलवायु, वन्यजीव और पर्यावरण
Ministry of Environment, Forest
and Climate Change

The quarterly newsletter of
the Central Zoo Authority, New Delhi

Vol 4 | Issue 3
(July - September 2023)



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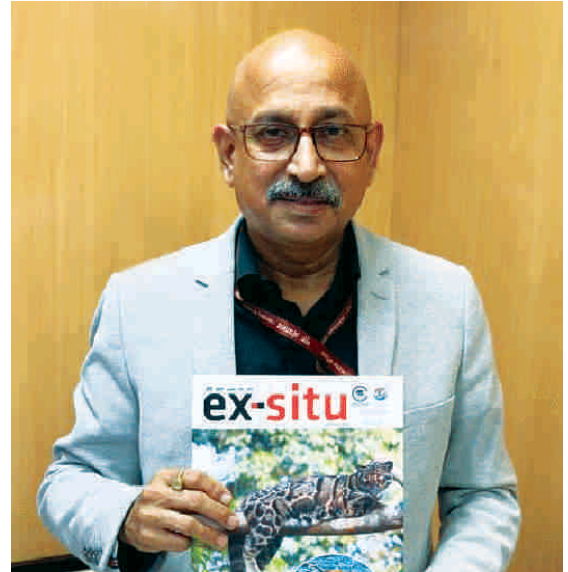
CONTENTS

From the Desk of the Member Secretary`	1
Tribute Sloth bear: Van Vihar National Park & Zoo, Bhopal, Madhya Pradesh	2
News & Events <ul style="list-style-type: none">■ Campaigns and Outreach Activities■ Training and Workshops	3
Species In Focus Greater-one horned rhinoceros: Sanjay Gandhi Biological Park, Patna, Bihar	9
Best Practices Best Practices for Captive Animal Management at Greens Zoological, Rescue and Rehabilitation Centre, Jamnagar	11
Talking Heads Journey of Central Zoo Authority: Shri P.R. Sinha, Former Member Secretary, Central Zoo Authority	19
Zoo in Focus - Indian Nandanvan Zoo & Safari, Naya Raipur, Chhattisgarh	20
Zoo in Focus - International The Living Desert Zoo and Gardens, Palm Desert, California, USA	22
Zoo in History Dr. K. Shivarma Karanth, Pililkula Biological Park, Mangalore, Karnataka	26



Cover photo credits - Left: Dr. Sanjay Kumar Shukla; Right: The Living Desert Zoo and Gardens, Palm Desert, California, USA

from the desk of the **Member Secretary**



Zoos play a multilayered and crucial role in the realm of wildlife conservation, education, research, and public awareness. Indian zoos have increasingly recognized the importance of outreach activities and campaigns to engage the public in wildlife conservation. By actively involving the community and wildlife enthusiasts in these campaigns, Indian zoos are nurturing a collective responsibility for the well-being of captive animals, promoting awareness and encouraging support for conservation efforts. This issue showcases a combination of outreach activities, capacity building programs, and workshops carried out in Indian zoos during July-September, 2023 which contributes to a holistic approach in safeguarding the future of iconic and endangered species.

It is with great pride to state that the Sanjay Gandhi Biological Park, Patna has tremendously worked towards achieving a successful conservation breeding programme of the One-horned Rhinoceros, marking a significant momentous

in conservation. The successful breeding program underscores the commitment of the park towards preserving endangered species and contributing to the global efforts of wildlife conservation. While acknowledging these successes, ongoing efforts are essential to address challenges such as habitat preservation, ensuring ethical treatment of animals, and promoting sustainable conservation practices. The success of Indian zoos lies in their adaptability, continuous improvement, and dedication to the broader goals of wildlife conservation and education.

The best practices used by the zoos in the management of captive animals are also considered as an additional responsibility of the zoos. One such best practices in terms of animal welfare, enclosure design, enrichment, animal nutrition, veterinary care, biosecurity, animal quarantine facilities for captive animal management at Greens Zoological, Rescue and Rehabilitation Centre, Jamnagar is showcased in this issue that act as a reference for other zoos of the country.

The present issue also highlights the Journey of the Central Zoo Authority through the Former Member Secretary, Shri P.R. Sinha (IFS, Retd.) which gave insight into the strategies and initiatives taken for the improvement of zoos in India and importance of Conservation breeding programmes for endangered species in Indian zoos.

This issue also includes a brief about The Living Desert Zoo and Gardens, Palm Desert, California, USA and Nandanvan Zoo & Safari, Naya Raipur, Chhattisgarh. The section Zoo in History covers the history of Dr. K. Shivarma Karanth, Pillikula Biological Park, Mangalore, Karnataka.

I hope that this issue of the CZA quarterly newsletter will help in creating awareness about the conservation breeding of Greater one horned rhinoceros and best practices adopted for captive animal management by zoos.

Dr. Sanjay Kumar Shukla
Member Secretary,
Central Zoo Authority

SLOTH BEAR

VAN VIHAR NATIONAL PARK & ZOO,
BHOPAL, MADHYA PRADESH

On January 9, 2022, our oldest and beloved sloth bear, Gulabo, bid us farewell. As the entire team of Van Vihar National Park and Wildlife SOS mourned the loss of Gulabo, we realized she had left behind a trail of lessons, hidden in the crevices of the story of her life – a life worth remembering, cherishing, and learning from.

Gulabo first arrived at the Wildlife SOS Van Vihar Bear Rescue Facility located in Bhopal, Madhya Pradesh in 2006. By this time, she had already spent nearly 20 years of her life in captivity – being abused as a dancing bear. Seeing Gulabo's brutal mental and physical condition when she first arrived gave a first hand lesson on the consequences of human greed. Despite having a free-ranging field and no chains restricting her anymore, Gulabo stood in one corner refusing to move. The fragile bear was blind in both eyes, had developed severe arthritis, and had lived a life devoid of proper nutrition and veterinary care.

Ubed, her caregiver, saw her on her very first day. He recalled " Gulabo was so meek and timid, it looked as if her spirit had been shattered. She was afraid of any human presence, even mine." To build a relationship of trust with Gulabo, Ubed began

spending time with her. He would go to her enclosure every morning, calling out her name as he gave her food. Slowly, Gulabo began recognizing his voice and responding to it – trusting that she was safe with him.

As time passed, Gulabo and Ubed formed a unique bond. Like a ritual, Ubed would call our Gulabo's name every morning and she would come to him ready to eat her meals. With her caregiver's love and ongoing medical care, Gulabo began healing.

And time was on Gulabo's side. On average, sloth bears live up to 15-20 years in the wild but under captive care, they can survive up to 20-25 years. At approximately 40 years of age, Gulabo was one of the oldest living sloth bears in the country. Despite her age Gulabo had the raw innocence of a child.

Gulabo's childlike demeanor inspired all of us to keep our inner child alive. She enjoyed each and every moment of her long life. She healed at a pace never seen before. She astounded all of us with her ability to relinquish any grievances of the past and live in the moment. She spent every day in leisure either basking under the sun or napping in a freshly dug termite mound. Her love for food also soon became evident as Gulabo would begin rattling her enclosure

gate minutes before her meal times! Her love for mangoes and grapes was unmatched and Ubed would make sure he snuck in some extra mangoes for her whenever possible.

While Gulabo's spirit soared free, her body could not survive the ravages of time. She had been placed under our specialized geriatric care routine since her first day. She was regularly administered multivitamins and immunity-boosting supplements. Her regular medical checkups became even more frequent over the years after she experienced a minor epileptic fit. Gulabo was diagnosed with intermittent epilepsy and put on anti-epileptic drugs.

Gulabo's age caught up with her and on 09th Jan 2022, she passed away in her sleep. Much like her first day at the center, Ubed was right next to her even during her last breath. Yet, unlike the meek timid bear, Gulabo was when she first arrived, Gulabo died as a fierce and happy bear. Her demise left everyone at Van Vihar National park and Wildlife SOS with a heavy heart, especially Ubed who woke up the next morning calling for Gulabo only to realize that she was long gone.

While Gulabo is gone, she continues to live in our hearts reminding us of the importance of time and pushing us to live every day.

CAMPAIGNS AND OUTREACH ACTIVITIES

UNITE FOR BIG CATS CAMPAIGN

Highlighting the initiatives of the Government of India for the conservation of the nation's large cats viz. Bengal Tiger, Asiatic Lion and Cheetah.

An awareness campaign with the theme 'Unite for Big Cats' commencing from August 31, 2023 culminates on September 17, 2023, coinciding with the one-year commemoration of the Cheetah's reintroduction in India has been



organized by Indian zoos. The campaign includes Big cat conservation pledge, Selfie Points & Kiosks, Awareness Workshops, Keeper talks, Children's Activities, Art and Photography Exhibitions etc.

Padmaja Naidu Himalayan Zoological Park, Darjeeling, West Bengal

As part of 'unite for big cats campaign' and International red panda day' Darjeeling Zoo conducted: Red panda rangers programme and awareness campaign on big cats for



students, Keepers talk, workshops in Zoology departments in colleges. Also, benches for visitors were painted with big cats, red pandas, birds and forests. Visitors are using them as selfie points as well.

Shaheed Ashfaq Ullah Khan Prani Udyaan Gorakhpur, Uttar Pradesh

Rangoli making, movie screening and selfie point during Unite for Big Cats Campaign at Gorakhpur Zoo.



Nawab Wajid Ali Shah Zoological Garden, Lucknow, Uttar Pradesh

A workshop on Big Cats Conservation to mark the Unite for Big Cats Campaign was organized at Lucknow Zoo today for the students and research scholars of Lucknow



OBSERVANCE OF SWACHHATA PAKHWADA IN RECOGNIZED ZOOS

Originating in April 2016, Swachhata Pakhwada is a two-week initiative that underscores the dedicated engagement with cleanliness-related issues and practices. This commendable endeavor entails the active participation of Government of India Ministries and Departments within

their respective domains as part of the monumental Swachh Bharat Abhiyan.

Swachhata Pakhwada from September 15th to October 2nd, 2023, across all recognized zoos were observed. The culmination of Swachhata Pakhwada observance coincides with the birthday of

Mahatma Gandhi, a beacon of cleanliness and harmony.

Various activities were included as part of the campaign- Cleanliness Drive, Public Awareness Campaigns, Eco-Friendly Initiatives, Interactive Workshops, Collaborative Efforts, Involvement of Eminent Personalities, Zero-Waste Events etc.



Sepahijala Zoological Park, Tripura



Pilikula Biological Park, Mangalore

WORLD GORILLA DAY CELEBRATION ON SEPTEMBER 24, 2023

Sri Chamarajendra Zoological Gardens, Mysuru, Karnataka

On World Gorilla Day outreach activity was conducted for awareness creation. Visitors, especially families, gathered to color gorilla sheets with their children, making learning fun. A quiz was conducted for participants, testing

their knowledge of gorillas and their habitats.

A unique game was organized for identifying gorillas by their nose prints, highlighting the individuality of each gorilla.

Visitors were educated about the

threats gorillas face and their vital role in our ecosystem.

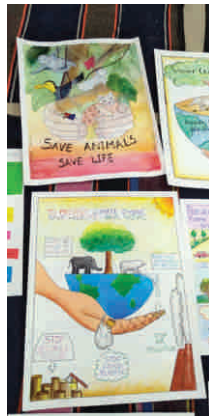
Visitors learnt how simple lifestyle modifications can help protect gorillas and their precious habitats, making World Gorilla Day; a day of both enjoyment and enlightenment.





CELEBRATION OF ZOO FESTIVAL AT ZOOLOGICAL GARDEN, ALIPORE FROM 21ST TO 25TH SEPTEMBER, 2023

The 5th zoo festival was celebrated in Alipore zoo with several outreach programmes. About 200 schools and 50 colleges participated in all the events.



MERI MAATI MERA DESH CAMPAIGN

Meri Maati Mera Desh Campaign by the Ministry of Culture, Govt. of India has been initiated which is envisaged as a culminating event of Azadi Ka Amrit Mahotsav and involves paying tribute to the 'Veers' who have made supreme sacrifice for the country.

All recognized zoos undertook awareness and outreach activities under the campaign in a befitting manner.



TRAINING AND WORKSHOPS

ZOO BIOLOGIST WORKSHOP AT SANJAY GANDHI BIOLOGICAL PARK, PATNA, BIHAR FROM AUGUST 5TH TO 7TH, 2023



ZOO KEEPER TRAINING PROGRAM WEST REGION AT SAKKARBAUG ZOOLOGICAL PARK, GUJARAT FROM SEPTEMBER 13TH-15TH, 2023



WOMEN IN ZOO

Himalayan Hospitality & Tourism, Best Green Tourism Award to Ms. **Soma Sarkar Das**, FRO, North Bengal Wild Animals Park, Siliguri, West Bengal



ZOO NEWS



World Lion Day 2023: Date, history, significance and celebration

By Zarafshan Shiraz, New Delhi

Aug 08, 2023 07:54 PM IST

World Lion Day 2023: Here's all you need to know about the date, history, significance and celebration of World Lion Day



World Lion Day 2023: Date, history, significance and celebration (Photo by Zdeněk Machšák on Unsplash)

Odisha government renames Deer park as Sambalpur Zoo

The zoo acts as a centre for awareness and education on wildlife for general public.

PTI

Last Updated 23 July 2023, 14:35 IST

Itanagar zoo gets 2 Royal Bengal tigers, 3 gharials

PTI / Jul 19, 2023, 08:31 IST



Itanagar: Two adult Royal Bengal tigers and three freshwater gharials, arrived at Itanagar Biological Park (Itanagar Zoo) here, from Nandankanan Zoo in Odisha.

National Zoological Park, New Delhi celebrates World Snake Day 2023

National Zoological Park, New Delhi (Delhi Zoo) has celebrated World Snake Day on 16.07.2023. The purpose of World Snake Day celebration is to protect snakes by raising awareness about snakes of India.

Sumit Arora Published On July 17th, 2023



National Zoological Park, New Delhi (Delhi Zoo) has celebrated World Snake Day on 16.07.2023. The purpose of World Snake Day celebration is to protect snakes by raising awareness about snakes of India, snakes diseases and importance of snakes in our ecosystem. On this occasion, an enrichment activity was conducted by snake keeping staff by providing cage furniture in the reptile house. Plantation was also conducted inside the snake houses.

World Lion Day: Lucknow Zoo Awaits New Lion Arrival After Demise of Resident Prithvi

By HT Correspondent, Lucknow



World Lion Day: This decision follows the recent demise of Prithvi, a lion that had resided at the Lucknow Zoo since 2015.

World Lion Day: An Asiatic lion will be relocated to the Lucknow Zoo from the Sri Venkateswara Zoological Park in Tirupati, Andhra Pradesh, as part of the wildlife exchange program.

This decision follows the recent passing of Prithvi, a lion that had resided at the Lucknow Zoo since 2015.

Hyderabad: Fun activities at Nehru Zoo Park on July 28, 29

Events to inspire people of all ages to participate actively in conservation efforts will be organized in Nehru Zoo Park on Nature Conservation Day.



Hyderabad: The Nehru Zoological Park has collaborated with the state government and Telangana State Forest Department to celebrate Nature Conservation Day on July 28 and International Tiger Day on July 29.

Global Tiger Day celebrated at Itanagar Biological Park

By HT Correspondent, Agra



ITANAGAR, 29 July: Global Tiger Day-2023 was celebrated at the Itanagar Biological Park in the presence of EPBCC Minister Mama Natung, PCCF Jitendra Kumar, and other senior officers of the department.

On the occasion, three patrolling vehicles donated by the ICICI Foundation to the tiger reserves in the state were handed over by ICICI regional head Prasanta Neog to the PCCF and Chief Wildlife Warden N Tam.

Further, Rocky and Sahini - the two adult Royal Bengal tigers brought here from Nandankanan Zoo in Odisha recently - were also released inside the enclosure for public view in the presence of the minister.

ANDHRA PRADESH FOREST DEPT CELEBRATES GLOBAL TIGER DAY IN SV ZOO PARK AT TIRUPATI



Tirupati, July 29: State Environment and Forests Minister Sri Peddiredy Ramachandra Reddy said that our state has made significant progress in tiger conservation and steps are being taken to establish a corridor connecting Seshachalam and Nallamala sanctuaries. He was the chief guest at the Global Tiger Day celebrations at SV Zoo Park this morning.

World Lion Day: Lucknow zoo to get Asiatic lion from Tirupati zoo

By HT Correspondent, Lucknow

Aug 10, 2023 12:01 AM IST

To mark the occasion, the Lucknow zoo will be receiving an Asiatic lion from Sri Venkateswara Zoological Park in Tirupati, Andhra Pradesh under the wildlife exchange programme on Thursday. The step is being undertaken after the recent death of Prithvi - a lion that had been at the Lucknow zoo since 2015



World elephant day: 'Over 2,600 elephants living in captivity in India'

By HT Correspondent, Agra

Aug 11, 2023 07:53 PM IST

Wildlife SOS has launched a petition to urge and request the government to take strict action to protect all captive elephants in India, through required bi-annual inspections and veterinary certificates of health.



Bhola enjoying his time inside the enclosure's pool and taking a refreshing bath Wildlife SOS Elephant Conservation and Care Centre in Mathura, (sourced)

World Elephant Day Celebrated With Competitions & Fruit Feast In Nandankanan Zoo Near Bhubaneswar

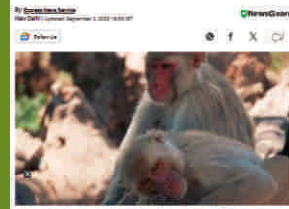
By HT Correspondent, Bhubaneswar



Bhubaneswar: Several competitions among visitors and a fruit feast was organised for the elephants inside Nandankana Zoological Park on the occasion of 13th World Elephant Day on Saturday.

Meet Delhi zoo's new residents – eight stump-tailed macaques

The macaques, which are listed as 'vulnerable' on the IUCN Red List of species, have been placed in quarantine for a minimum of 31 days and are likely to be released into an enclosure for public viewing only after they are officially safe.



The addition of the macaques to the lion habitat of Azimul Haq Zoo in Delhi. Photo: Anand Kumar (Twitter)

Braille corridor for visually impaired at Patna zoo soon

By PTI / Updated: Aug 19, 2023 10:27 IST



Patna: Soon, visually impaired children will also be able to know about different types of animals and get information related to them at Patna Zoo. A Braille corridor and a library are being set up at the zoo for such persons.

Darjeeling zoo to get two Siberian tigers in 'exchange programme'

By Anshu Gupta / Updated: Sep 16, 2023, 11:13 IST

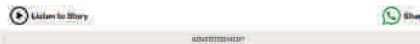
Padmaja Naidu Himalayan Zoological Park in Darjeeling will receive a pair of Siberian tigers from Patna zoo in Cyprus in an animal exchange programme. The Darjeeling zoo will send two red pandas in exchange, said zoo officials.



Opening gate has 25 red pandas

Double delight: Darjeeling zoo welcomes snow leopard and red panda cubs

It was a double delight for the Darjeeling zoo authorities as they welcomed a snow leopard cub and four red panda cubs on its premises. All the cubs are healthy and doing well.



The snow leopard gave birth to its cub and two red pandas gave birth to two cubs each in Darjeeling zoo in July and April respectively. (Photo: Anand Kumar/ANI)



The snow leopard gave birth to its cub and two red pandas gave birth to two cubs each in Darjeeling zoo in July and April respectively. (Photo: Anand Kumar/ANI)

India Today News Desk
New Delhi, Updated: Aug 19, 2023 10:27 IST

A snow leopard gave birth to a cub at a zoo in West Bengal's Darjeeling. At the age of 13 years and three months, she is the oldest snow leopard to give birth in the last three decades of the animal's conservation breeding programme.

Patna zoo welcomes 3 new inmates

By / Shantala Vidhana Sabha / Updated: Jul 1, 2023, 07:57 IST

The Biju Patil Biological Park, commonly known as Patna Zoo, on Friday welcomed three new inmates, including a hooded gibbon, a female rhinoceros and a black panther. These new animals have been brought from Assam and kept in quarantine. They will soon be put in public view, a zoo official said.



Stable environment, forest and climate change minister Taj Prasad Yadav at Patna zoo in Friday

West Bengal's Bardhaman zoo to get lions, tigers as govt plans major revamp

The development works at the Bardhaman Zoological Park will start within two-and-a-half months, a government official said.

PTI
Last Updated: 01 July 2023, 16:20 IST



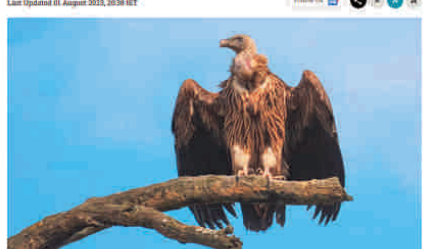
Representative image. Credit: Prakash Photo

The Bardhaman Zoological Park in West Bengal will be revamped, and animals such as tigers, lions, leopards and rhinos will be brought in, state Forest Minister Jyotipriya Mallick said.

Rescued Himalayan vultures script India's first captive breeding success story in Assam Zoo

With only France breeding Himalayan vultures in captivity, the achievement makes India the second country to do so.

Sumit Karmakar / Updated: Aug 23, 2023, 05:38 IST



Himalayan vultures are a 'near threatened' bird species. Credit: Shikha Photo

When flocks of Himalayan vultures were rescued from pairs of Assam after poisoning incidents and accidents wove back in 2011-2012, veterinarians were skeptical about the survival of the high-altitude bird species in the state's hot and humid weather.

Eagerly awaited arrival of HP leopards at Ludhiana zoo stalled by delayed permissions

By Anshu Gupta / Updated: Sep 18, 2023, 08:33 IST

The Ludhiana zoo in India is eagerly awaiting approval from the Central Zoo Authority of India to bring in a pair of leopards. The zoo authorities have already built an enclosure for the prospective leopards and have received consent from the Himachal Wildlife. Read More



One of the applicants and a Himalayan bear and (R) the leopard enclosure.

LUDHIANA: Visitors to Ludhiana zoo will get to observe a pair of leopards up close, if the Central Zoo Authority of India (CZA) gives the go ahead. Proposal to bring the leopards to Ludhiana zoo is pending with them. Zoo authorities in Ludhiana sent a reminder to the CZA last month but there has been no word yet and the wait is getting longer.

Lion safari is back at Vandalur zoo, on AC bus

By / Sep 28, 2023, 08:52 IST

The lion safari at the vandalur zoo in Chennai is set to resume after a three-year hiatus, this time on air-conditioned buses. The trip, which was halted due to the COVID-19 pandemic, are being reintroduced with the help of corporate social responsibility funds.



After a three-year hiatus, the lion safari at Vandalur Zoo is set to resume on air-conditioned buses. (Representative image)

CHENNAI: A huge crowd of men, women and children watched in awe as the waves of a pristine Kutchi lake in the city gently rolled over sailboats, a kayak and a rowing boat. The lion safari at the Vandalur zoo is coming back after a three-year gap – on air-conditioned buses. The managers of Adigar Anna Zoological Park are relaunching the trip on Monday when the 'wildlife week' celebrations begin.



Nandankanan Zoo (Photo/ANI)

Odisha's Nandankanan welcomes new guests from Aizwal Zoo

ANI / Updated: Sep 10, 2023 09:48 IST

Bhubaneswar (Odisha) [India], September 10 (ANI): Nandankanan Zoological Park in Bhubaneswar welcomed set of new guests on Saturday from Mizoram's Aizawl Zoo, according to the Central Zoo Authority of India (CZA).

"The animals brought to Nandankanan Zoo from Aizawl Zoo included - one pair of Hooded Gibbon (a 4-year-old male and a 13-year-old female), one pair of Pig Tailed Macaque (7-year-old male and female) and one Himalayan black Bear (11-year-old female)," said authorities at Nandankanan Zoo.

Itanagar Zoo's vital role in saving Hooded Gibbon

By Pradeep Kumar

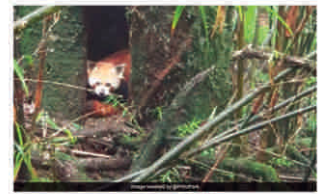


ITANAGAR, July 07: First Hooded Gibbon (non-vision) born breeding centre of India, fully funded by Central Zoo Authority (CZA), was launched in Itanagar Biological Park, popularly called Itanagar Zoo, spread its over 250 hectares, after the lesser ape's population during a survey conducted in 2006-07 was estimated to be around 600 in the wild, said zoo curator Raja Raju.

Video: Darjeeling Zoo Welcomes Four Red Panda Cubs And A Snow Leopard Cub

Calling it a great success for Red Panda augmentation programme, the Director of Darjeeling Zoo also said that the mothers and cubs are being carefully monitored.

Video News | Edited by Anand Kumar | Updated: August 11, 2023 10:44 pm IST



In Darjeeling Zoo, The red pandas (parent and their cubs) are being monitored.

New Delhi: There is good news for animal lovers from the Darjeeling Zoo. Two red pandas here - Teesta and Nira - have given birth to two cubs each. The zoo has also welcomed a baby snow leopard.

Mohali: Birth of two cubs bolsters Chhatbir zoo's tiger count to eight

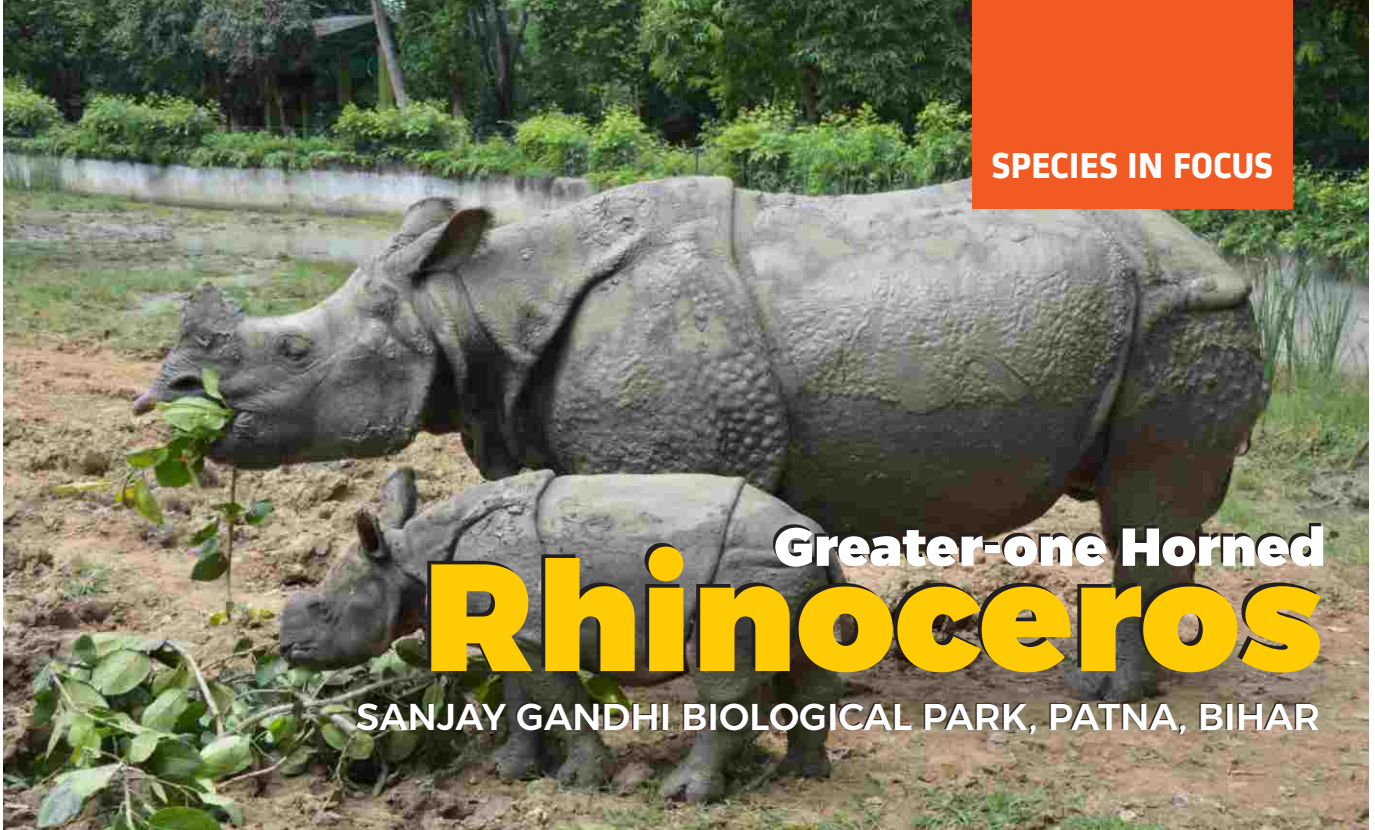
By Mohit Khanna, Mohali

Aug 06, 2023 04:59 AM IST

Sharing details, Chhatbir zoo field director Kalpana K said female white tigress Gauri delivered two healthy cubs during the wee hours of August 3



Eight-year-old white tigress Gauri and three-year-old Royal Bengal tiger Arjun were paired together in April under expert supervision. (HT Photo)



Greater-one Horned Rhinoceros

SANJAY GANDHI BIOLOGICAL PARK, PATNA, BIHAR

TEXT & PHOTOS

Sanjay Gandhi Biological Park,
Patna, Bihar

Sanjay Gandhi Biological Park, Patna is famous for successful conservation breeding of one horned rhinoceros and in the number of having captive bred rhinoceros. It has 2nd position in the world after the San Diego Zoo, U.S.A. Considering the suitable climate and environment for successful breeding of Rhinos in this zoo. Captive Breeding of Greater one Horned Rhinoceros in SGBP has helped it to acquire global recognition.

In consideration of the past achievement, suitable climate, conducive environment, appropriate infrastructure facilities available for breeding of the One Horned Rhinoceros at the Patna Zoo, the Central Zoo Authority, New Delhi has selected this zoo for breeding of Rhinos and approved a scheme for construction of Rhino Conservation & Breeding Centre. The Central Zoo Authority, New Delhi sanctioned a scheme and provided necessary financial assistance for construction of separate and off-display Rhinoceros Conservation Breeding Centre in the zoo which is spread over more than 13 acres of land.

The construction work of Rhino Conservation & Breeding Centre has been completed in the western portion of the park in more than 13 acres of land. The total area of Rhino Conservation & Breeding Centre is 54117 sq.m. In each enclosure, a night house has been constructed in an area of 168.127 Sq.m. which includes the animal house of 112,350 Sq.m., feeding and drinking water facility in 11.200 Sq.m. and Keeper's veranda in 37.734 sq.m. This is a unique & modern enclosure where we can keep almost 25 rhinos at a time. The naturalistic enclosure has been planted with grasses from wild keeping in mind for restocking in wild. There is a depression amidst conservation breeding centre, more like a low-lying wetland in which marshy habitat conditions prevail throughout the year. The potent mating pair brought there and becomes conducive to each other in a natural and soft way.

The breeding centre is double layered to provide complete serenity to the inhabiting rhinos there. To monitor closely, the shelter house is designed in such a way that the zoo keepers, supporting staffs, veterinarian or experts can intervene easily when required. This is also monitored 24x7 through CCTV surveillance. There is a round the clock availability of dedicated zoo keepers for rhinos

inhabiting there. The Conservation Breeding Centre for Rhinoceros has been functional since 2019.

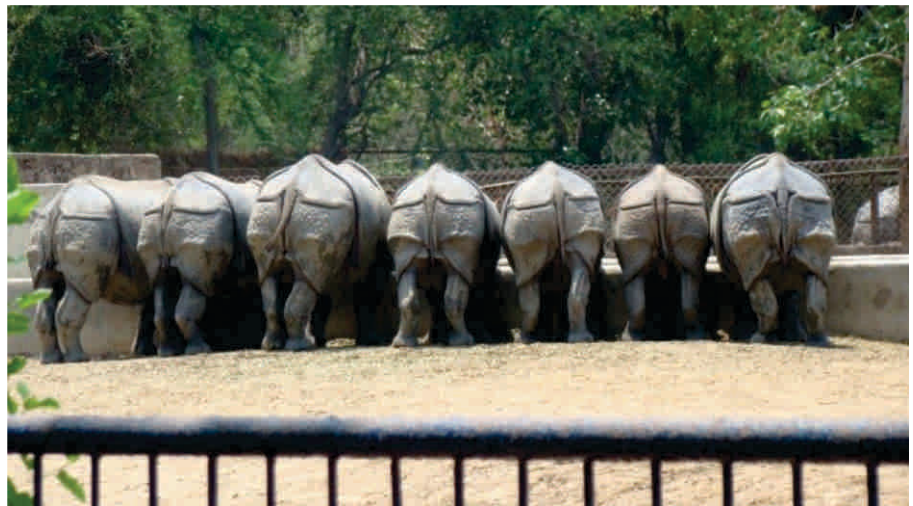
BRIEF HISTORY OF CAPTIVE RHINO AT PATNA ZOO

For the first time on 28.05.1979 this park received one pair of Rhino named 'Kancha' and 'Kanchi' from State of Assam. Both Rhinos were sub-adult. Almost after 3 years, on 28.03.1982, one rescued Rhino (named Raju) from Bettiah Forest (at present Valmiki Tiger Reserve) came to this zoo, which led to start breeding of rhino in this park. In the year 1988 one female Rhino (Hartali) took birth from successful conjugation of Raju and Kanchi.

Again in 1991, same pair of Rhino bred again and one more female rhino was added in the list. The first two Rhino of this park named Kancha and Kanchi finally lead to the birth of one male Rhino in the year 1993. This showed that all Rhinos of this park are potential breeder.

Hartali the first Rhino calf of this park produced eight calves till date (Seems to be a record) and she considered to be one of the most successful breeding females as far as captive breeding in Rhino is concerned. Park management is also very sensitive towards avoiding inbreeding of Rhinos housed at Patna Zoo, So, to

improve genetic diversity one male rhino 'Ayodhya' and one female rhino 'Gairi' were brought to this park under animal exchange programme from Delhi Zoo and San Diego Zoo, U.S.A. respectively. At present we have six (6) blood lines of Rhinos. Sanjay Gandhi Biological Park, Patna has provided rhino to Delhi, Kanpur, Ranchi, Chennai, Hyderabad Zoo, Kevadia and country like U.S.A. and Indonesia (Proposed). At present Sanjay Gandhi Biological Park, have 8 male and 6 female rhinos as detailed in the table below.



Sl. No.	Name of Rhinoceros	Dam	Sire	D.O.B.	Age (approx)	Sex
1	Ayodhya	Mohini	Dabbu	27.12.1992	30 yrs.	Male
2	Hartali	Kanchi	Raju	08.07.1988	35 yrs.	Female
3	Ganesh	Hartali	Raja	19.09.2004	18 yrs.	Male
4	Shakti	Election	Ayodhya	08.07.2017	6 yrs.	Male
5	Gouri	Hartali	Kancha	08.08.2002	20 yrs.	Female
6	Jumbo	Rani	Ayodhya	11.11.2011	11 yrs.	Male
7	Lali	Gairi	Arun	03.12.2005	17 yrs.	Female
8	Rani	Kanchi	Raju	06.07.1991	32 yrs.	Female
9	Shakti Raj	Gairi	Arun	30.10.2007	15 yrs.	Male
10	Vidhut	Gairi	Ayodhya	06.09.2013	10 yrs.	Male
11	Gudiya	Gouri	Ayodhya	08.05.2020	3 yrs.	Female
12	Yuvraj	Rani	Ayodhya	16.06.2020	3 yrs.	Male
13	Prince	-	-	-	4 yrs.	Male
14	Ghatongi	-	-	-	4 yrs.	Female

REASONS FOR SUCCESSFUL BREEDING AT PATNA ZOO

Rich Tradition, Maintenance of multiple blood line (Purity of Bloodline), Presently Six (6) different blood lines, Scientific Record keeping, Trained Man power and rigorous Training, Experienced veterinarian with well-equipped veterinary hospital.(MoU with Patnaveterinary college) and Naturalistic enclosure with muddy moat and clean night houses.

An ambitious project for reintroduction of Rhinos in Valmiki Tiger Reserve is under process under expert team in which Rhinos from Patna Zoo may also be released after due process. Patna Zoo can play more roles with the cooperation of other zoos holding captive population of the One Horned Rhinoceros to maintain the appropriate genetic diversity among the captive population of the species in the country for long term survival of the captive population. It would ensure the availability of physical, genetically and behaviourally suitable population of the species for future use in case of necessity to supplement the in-situ conservation efforts of the species in the country. In 2021 Patna Zoo donated one female rhino (namely Election) to Kevadia Zoo & it has also shared its best practices and expertise of rhino breeding/care to Kevadia Zoo. Due to regular prescription and suggestions about rhino breeding/care from experts of Patna Zoo and Kevadia Zoo recently successfully bred that female rhino (Election) & its calf is doing well. So in a way the Patna Zoo not only breeding the rhino in its own breeding centre but also helping other zoos to breed this unique

RECENT DEVELOPMENTS

During Covid pandemic, despite all odds two births of healthy Rhino calf within a span of one month in the year 2020 is the testimony of fact

related to growing prowess of Patna Zoo managers and workforce in breeding of Greater one horned Rhinoceros, presently no other Zoo in India has such a brilliant track record in Rhino breeding.





BEST PRACTICES FOR

Captive Animal Management

TEXT & PHOTOS

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At Greens Zoological, Rescue And Rehabilitation Centre, Jamnagar

Zoos of the twenty-first century have integrated the modern concepts of zoo biology and captive animal management into their design and daily practices as premier institutions for animal conservation and raising public awareness. From an overdependence on visitor-centric sterile enclosures, modern zoos have embraced naturalistic enclosure design and adopted best practices for captive animal management that are better aligned with the tenets of ex-situ conservation and animal welfare. Zoos today serve multifarious roles that go beyond the confines of visitor entertainment and aim to conserve global biodiversity by integrating both ex-situ and in-situ conservation under the umbrella of the "One-Plan Approach for conservation". Central

Zoo Authority's (CZA) vision and guidance has been pivotal to the redevelopment of Indian zoos. Greens Zoological, Rescue and Rehabilitation Centre has been established on the bedrock of animal welfare and biodiversity conservation in alignment with the goals of CZA.

Greens Zoological, Rescue and Rehabilitation Centre (GZRRC) aims to become one of the premier global institutions working towards animal welfare and global biodiversity conservation. In order to achieve these goals, GZRRC has implemented institution wide best practices that are crucial to its daily functioning and the achievement of its long-term goals. In this article, we discuss some of the salient features of the best practices implemented at GZRRC that has been instrumental to its past

and present success in captive animal management. The objective of this article is to establish a baseline for the adoption of universal best practices for captive animal management by initiating a dialogue for peers.

BEST PRACTICES FOR ANIMAL WELFARE

Animal welfare is defined by Broom as the state of the animal as it tries to cope with internal and external environment. However, modern definitions of animal welfare also focus on providing opportunities to the animals to experience positive affective states. Animal welfare, in its present form, is a holistic concept delving deep into biopsychosocial facets of captive animal management. This entails a complete understanding of the species biology,

juxtaposed with an acceptance of unique welfare requirement of each individual animal in our care. Greens Zoological, Rescue and Rehabilitation Centre has a holistic animal welfare evaluation and monitoring programme that works across all verticals of the organization. Animal welfare considerations flow from all aspects of enclosure design and day-to-day operations of GZRRC.

GZRRC has a panel of subject matter experts who are assigned to the care and welfare of each animal group housed at the facility. This panel comprising of veterinarians, biologists, curators, animal-keepers meet every month to discuss about the extant and emergent welfare requirement of the species housed at GZRRC. The best practices for the upkeep and management of the species are identified and reviewed against the incumbent welfare and husbandry practices regularly. The same is compared to the physiological and behavioural welfare indices of the animals and based on the report, scope, methods, and strategy of welfare improvement for each species is delineated and communicated for compliance.

BAYESIAN FRAMEWORK FOR ANIMAL WELFARE IMPROVEMENT

As compared to the empirical approach, GZRRC follows a Bayesian model for animal welfare assessment, and improvement. GZRRC, biologists and curators diligently follow the latest development in animal welfare research to guide its captive animal management programme. The captive management programme for each species is designed based on prior information available from available scientific literature for each species. The response of each animal to the extant husbandry, management and enrichment practices is collected. Based on the data collected, we create a likelihood function that quantifies the probability of observing the collected data given the welfare state of the animals. Based on the evidence available, we update the prior information about the species' welfare requirement. This updated information about the welfare requirement is updated iteratively as new evidence emerges about the welfare requirement of the species.

Applying Bayesian framework to animal welfare assessment is a flexible and adaptive method that allows for new information to be assimilated with established practices for refining the husbandry practices over time unconstrained by the frequentist approach. The updated information about animal welfare is used to inform the decisions pertaining to animal welfare interventions, resource allocation and policy development.

ENCLOSURE DESIGN AND ENRICHMENT INTERVENTIONS

GZRRC has some of the finest enclosures for housing captive animals in near natural habitats, where they have the freedom to express species-typical behavioural repertoires. Unlike typical captive facilities, GZRRC enclosure design ethos is founded on the principles of integrating functional complexity in enclosure designs with a view to create a near natural experience for the housed species. Enclosures are designed to have equal or near equal functional complexity across each zone to maximize enclosure usage and encourage exploratory behaviour in animals.

The enclosures are designed to integrate a mosaic of substrates, and topographical features that recreates the natural habitat and promotes the expression of species typical behaviours. This translates into an interconnected canopy for brachiating macaques, hiding places and natural perches for leopard, as well as opportunities to express natural foraging behaviours. Species-typical vegetation representative of the niche of the species are planted at the enclosures to ensure that the animals can display the entire gamut of behaviour repertoire.

The biologists, curators, veterinarians, and subject matter experts collaborate with architects and the construction team from the planning phase till the animal is released at the enclosure to ensure that the enclosure designs cater to the need of each species. The post-occupancy evaluation of enclosures



ENRICHMENT INTERVENTIONS

Enrichment brings novelty to the mundane captive environment and stimulates the expression of a diverse species typical behaviour repertoire. Animals exposed to regular, and tailored enrichment interventions are less likely to display stereotypic behaviours commonly associated with zoochosis.

At GZRRC, each individual animal is treated as a single welfare unit that requires a separate plan. Zookeepers are trained to monitor the behaviour of each animal under their care and understand their biological, behavioural and social requirement. An enrichment plan is created for every individual housed in and enclosure and based on the response of each animal, the intervention is modified to increase the chances of expressing species-typical behaviours.

Based on the feedback received from animal keepers and the research findings, biologists and curators create an enrichment plan for each individual and evaluate the efficacy of the same after implementation. In-house fabricators make the enrichment devices out of natural materials that are the animals should be more or less likely to encounter in the wild.

Several types of enrichment devices and their prototypes are manufactured at different scales and implemented as per the requirement of each animal. Most importantly, keeper training is prioritised, so that keepers are able to understand the biological and behavioural needs of the animals under their care and fabricate enrichment interventions accordingly. So that enrichment interventions are audited at multiple levels and monitored for efficacy. Keepers, along with biologists and curators, hold regular meetings to effectively design and modify enrichment interventions for each animal. Each enrichment intervention is carefully audited and vetted by the expert group for each of the species and monitored for species appropriateness. Once enrichment



interventions are finalised, the location and the number of the enrichments along with their types is decided based on the number of individuals in each enclosure and their enrichment preferences. Enrichments are placed to increase enclosure usage, reduce agonistic interactions, and increase the chances for the expression of exploratory species typical behaviours.

Safety is one of the most important aspect of any enrichment intervention. Therefore all staff members check the enrichment device prototypes for any design flaws that can lead to injury and stress to the animals. All enrichment interventions are designed to promote species-typical behaviours without causing any social disruption due to unnecessary competition for enrichment resources among individual animals housed in the same enclosure.

Documentation is a very important aspect of any enrichment intervention therefore, keepers are trained by the biologist and curators to effectively collect behaviour data as well as non-invasive faecal samples to better evaluate the efficacy of the enrichment interventions. This welfare audit is that the heart of the success of the enrichment intervention program of GZRRC. At GZRRC, animal welfare, enclosure design, enrichments, and veterinary health care are inter-connected to

one another and together to form the foundation of captive animal management.

BEST PRACTICES IN ANIMAL NUTRITION

Animal welfare in captivity is linked to good nutrition and veterinary management practices. Similarly, animal nutrition is crucial to the welfare, behaviour patterns, and general health of captive animals. Greens Zoological, Rescue and Rehabilitation Centre lays a lot of emphasis on the integration all facets of captive management to achieve its long-term goal to provide excellent care and welfare to all animals.

GZRRC has a team of expert nutritionists from India and abroad. Animals housed at GZRRC are provided the best-balanced nutrition on the basis of species, age, sex, health, seasonal, time and behavioural requirements. The nutritionists make sure the keepers provide the food to all enclosures as per standard operation procedure. The nutritionists and biologists regularly train the keepers so that they have a complete understanding of the species biology of the animals under their care. Care is taken so that the daily food enrichment provisioning mimics that in the wild, leading to an increase in the expression of species-typical foraging and food processing behaviours. The animal keepers provide food-based enrichment in

each enclosure so that the animals can express their natural species-typical behaviour patterns.

The nutritionist team members record and study the food intake of each individual animal to know if the animals feed on a balanced diet as their favourite choice of food may not provide all nutrients. Feedback of animal caretakers, Veterinarians and Curators are taken on the intake of food, feeding behaviour, growth, weight, and general health condition in planning of diet for the animals. Dietary records are maintained everyday so that the history of feeding, food choice, feeding time, amount of food intake, amount of food uneaten, and supplements given are recorded. All food materials are fresh and tested by two independent laboratories for pesticide, harmful microbes, pests and any other contaminants before being prepared to be fed to the animals. GZRRC has a state-of-the-art utensil sterilisation facility where all utensils are sanitised regularly. Each facility has four sets of utensils that are rotated to ensure that all animals at GZRRC have access to clean and disease-free environment.

By ensuring that proper nutrition is provided to all animals based on their individual needs, GZRRC has adopted a proactive rather than a reactive approach to animal welfare and health management at its facility.

HOLISTIC VETERINARY INFRASTRUCTURE

Greens Zoological, Rescue and Rehabilitation Centre currently has two modern veterinary hospitals at its facilities with one at Satellite Rescue Facility and the second at the Animal Quarantine centre. Both the hospitals have their associated laboratory facility and required personnel. These facilities are useful in routine check-up of animals and treatment of ailing, injured, sick, or senile animals. Medical and surgical procedures for animals are performed at the hospitals whenever required.

Each hospital has the following list of equipment:

1. Gaseous anaesthesia machines.
2. Portable X-ray scanners .
3. Operation Theatres (OT) room with OT lightning.
4. Ultra-Sonography machines .
5. Dental kits and dental surgery equipment.
6. Portable blood testing equipment.
7. Tranquilizing equipment.

STATE-OF-THE-ART VETERINARY HOSPITAL

The Greens Zoological Rescue and Rehabilitation Centre (GZRRC) has built the largest veterinary hospital in India, a pioneering establishment dedicated to the comprehensive care and treatment of injured, distressed, and ailing wild animals. This state-of-

the-art hospital is at the forefront of wildlife healthcare, offering a spectrum of services and cater to the unique needs of a wide array of animals and a testimony to GZRRC's commitment to wildlife conservation. Spanning an area of 10,000sqm within the GZRRC premises, the veterinary hospital is equipped with cutting-edge infrastructure, advanced medical equipment, and a team of experienced veterinarians and wildlife specialists. It serves as a critical hub for the rescue, treatment, and rehabilitation of a diverse range of wildlife species, from birds and mammals to reptiles and amphibians.

The hospital includes specialized treatment units designed to cater to the unique needs of different species. From avian rehabilitation to large mammal care, each unit is equipped with facilities tailored to the specific requirements of its inhabitants. The animal hospital has advanced diagnostic tools, including advanced imaging equipment like Computed Tomography (CT), Magnetic Resonance Imaging (MRI), and on-site laboratories, enabling rapid and accurate assessments of the health conditions of admitted animals. This ensures timely intervention and appropriate treatment plans. The hospital boasts dedicated operating theatres equipped with modern surgical instruments, allowing for intricate and specialized procedures essential for the treatment of severe injuries or medical conditions of animals. In addition to medical treatment, the facility provides rehabilitation spaces for sick animals. These spaces are crucial for animals to regain strength and redevelop natural behaviours.

The hospital operates round the clock to provide emergency care for GZRRC animals and other wild animals. This continuous availability ensures that prompt attention is given to animals in critical condition. The hospital serves as a hub for research initiatives, contributing to a better understanding of wildlife health and conservation. The hospital collaborates with other governmental agencies, conservation organizations,



and wildlife experts to broaden its scope of operations. Additionally, outreach programs and workshops are being conducted to raise awareness about wildlife health and conservation issues.

The wildlife hospital at GZRRRC stands as a symbol of its commitment to safeguarding wildlife. It will help to fulfil GZRRRC mission to treat and rehabilitate native wildlife, improve its ability to act as first responders in emergencies and play a pivotal role in conservation programs for threatened wildlife. In essence, the wildlife hospital at GZRRRC is not just a medical facility, but a sanctuary of healing, compassion, and dedication to the well-being of zoo animals and wildlife in general.

HOSPITAL AT THE GZRRRC SATELLITE RESCUE FACILITY FOR LEOPARDS

The facility has a dedicated veterinary hospital with all the necessary equipment along with a post-mortem room and an incinerator. The hospital is equipped with state-of-the-art facilities including CT Scanning machines, MRI scanning machines, ICU units specifically designed for animals, birds and reptiles, in patient ward rooms, operation theatre, gaseous anaesthesia machines, ultrasonography machines, dental kits and a highly developed diagnostic laboratory. The hospital has a fully furnished surgical theatre equipped with surgical suite and ceiling mounted lighting. The surgery suite includes a hydraulic surgery table and has enough room to work with all the large animals at the centre. Other than this, the hospital has endoscopy machine, low-level laser therapy, Ozone therapy, thermal scanner, nursery, pharmacy and pathology lab thus ensuring proper care and health of the animals. There is a dedicated clinical pathology laboratory for pathological research attached to the main hospital. Considering the biosecurity issues, the post-mortem room at the facility is isolated from the live animal area. The post-mortem room has its own rest room, equipment cleaning,



specimen preparation and storage/disposal facilities to prevent movement of fomites. A post-mortem examination in accordance with accepted veterinary procedures is performed in case of an animal death to determine the cause of death.

BIOSECURITY BEST PRACTICES

Biosecurity at the Greens Zoological Rescue and Rehabilitation Centre stands as a paramount pillar in safeguarding the health and well-being of the resident animals, staff, and the surrounding urban ecosystem. This comprehensive approach encompasses a range of protocols, procedures, and preventive measures to mitigate the risks of disease transmission and maintain a safe environment for all inhabitants. The fundamental principle of biosecurity at GZRRRC involves stringent measures aimed at preventing the introduction and spread of infectious agents, parasites, or diseases within GZRRRC. Here's an overview of key elements and practices incorporated into biosecurity protocols at the centre to mitigate any spill over of pathogens.

Quarantine Protocols: Before any new animal enters GZRRRC, it undergoes a thorough quarantine period. This practice serves as a critical first step in preventing the introduction of potential pathogens. During this time, the animal is monitored closely for

any signs of illness, and necessary health screenings and tests are conducted.

Restricted Access and Controlled Movement: Access to different areas/facilities at GZRRRC is controlled and restricted, minimizing the chances of cross-contamination between different animal enclosures. Staff are required to follow strict hygiene protocols such as hand sanitization, foot baths and changing footwear.

Hygiene and Sanitization Practices: Stringent hygiene measures are enforced, including regular hand washing, use of disinfectants, sterilizing and cleaning of equipment and surfaces. Dedicated sterilization station is present at the centre to sterilize utensils and equipment used. The centre also encourages staff to adherence to sanitizing practices.

Isolation Facilities: In cases where animals display symptoms of illness or require specialized care, isolation facilities are in place to prevent the spread of disease to other individuals. These areas are equipped with separate ventilation systems and staff are trained in specific protocols for handling and caring for sick animals.

Training and Education: All staff members undergo thorough training on biosecurity measures and

protocols to ensure strict compliance and to minimize any inadvertent risks. Regular updates and refreshers are provided to keep everyone informed about the latest best practices. Other than this, mock drills with staff are done at regular intervals. Signages on biosecurity issues are placed at various locations to raise awareness about the importance of maintaining biosecurity within the premises.

Collaboration and Monitoring:

Collaborations with veterinary experts and periodic health assessments contribute to continuous monitoring and evaluation of the animals' health. The health committee of GZRRC meet periodically to access various biosecurity issues. This proactive approach helps in early detection and management of any potential health issues.

Environmental Management: The centre complies with all environmental regulatory compliances. The centre prioritizes maintaining a clean and healthy environment, including waste management and pest control, to further reduce disease risks.

The implementation of stringent biosecurity measures at GZRRC underscores the commitment to ensuring the highest standards of animal welfare, health, and conservation. By integrating these protocols into daily operations, the centre endeavours to create a safe haven for its residents while



contributing to broader wildlife conservation efforts.

ANIMAL QUARANTINE FACILITIES

Quarantine plays a major role in ensuring the health and welfare of animals housed at GZRRC. GZRRC has one of the largest modern animal quarantine facility that ensures the health and welfare of all animals that are brought to the facility. The animal quarantine facility is the place where new animals or animals that need to be isolated for various medical issues are usually housed. The quarantine facility is equipped with its own animal hospital and post-mortem room. The hospital is well furnished

and equipped as listed above. Animal holding/treatment and staff zones are positioned to minimize travel times and reduce animals stress levels during transport. The treatment and holding areas have open paddocks and night cells for observation. The paddock area incorporates daylighting to help preserve the species-typical circadian rhythm and circulate fresh air throughout the facility. The facility has dedicated tranquilizing equipment and associated drugs for any medical emergencies. This facility has its own infrastructure including its very own animal ambulances and staff transport vehicles to prevent any biosecurity lapses.

The State-of-the-Art Animal Quarantine Facility at Greens Zoological, Rescue and Rehabilitation Centre stands as a pioneering testament to GZRRC's commitment to wildlife care, setting new benchmarks in animal welfare, health management, and biosecurity. As the largest facility of its kind in the country, it epitomizes cutting-edge infrastructure and advanced protocols aimed at ensuring the optimal health and safety of its animal residents.

Spread across an expansive area of nine acres, this facility boasts a myriad of features and functionalities that define its stature and effectiveness:



1. Extensive Capacity: The facility has 170 enclosures of various dimensions designed to accommodate a diverse range of species, offering individualized enclosures tailored to suit the needs of various animals, from small mammals to large carnivores and herbivores, birds, and reptiles.

2. Advanced Medical Infrastructure: Equipped with state-of-the-art medical equipment, including diagnostic tools, imaging facilities, and on-site laboratories, the facility enables swift and precise health evaluations for incoming animals. The facility has its own Post-Mortem room.

3. Segregated Isolation Units: These units are meticulously designed to ensure strict segregation of incoming animals, preventing potential transmission of diseases or parasites between individuals.

4. Rigorous Quarantine Protocols: Every animal undergoes a comprehensive quarantine period upon arrival. This phase involves stringent health assessments, tests, and observations by a team of specialized veterinarians to detect any potential health issues.

5. Expert Care and Observation: A dedicated team of veterinary experts, animal biologist, and caretakers provides round-the-clock care and monitoring, ensuring

the physical and mental well-being of the animals.

6. Biosecurity Measures: The facility upholds stringent biosecurity standards, including regular disinfection protocols, controlled access, and waste management strategies, minimizing the risks of disease transmission.

The facility maintains a change room with showers for the staff to maintain the highest standards of hygiene and biosecurity at the facility.

7. Environmental Enrichment: Enclosures are thoughtfully designed to mimic natural habitats, offering enrichment activities and elements that cater to the behavioural needs of the animals, promoting their overall well-being during the quarantine period.

8. Continuous Improvement: The facility operates with a commitment to continual enhancement, regularly updating protocols based on the latest scientific advancements and fostering ongoing staff training programs to maintain the highest standards of animal care.

As the largest and most advanced animal quarantine facility in India, this centre demonstrates GZRRC's dedication to wildlife conservation, setting a gold standard in animal care, health management, and biosecurity. It serves not only as a safe haven for animals in need but



also as a beacon of excellence in the field of wildlife rescue.

SUMMARY

Greens Zoological, Rescue and Rehabilitation Centre has established the facility with the vision for long-term development of zoo biology as arigorous scientific discipline that contributes to the conservation of biodiversity and the promotion of captive animal welfare. Since its development, GZRRC has focused on the creation and refinement of best practices for the standard operating procedures that lead to best animal welfare outcomes. Captive animal welfare deficits are rampant across most ex-situ establishments due to the lack of documentation and the implementation of standard operating protocols. GZRRC is ameliorating this problem by establishing protocols by collaborating with subject matter experts and following the Bayesian framework for tuning the best practices to meet the emergent requirement of a captive animal management facility. GZRRC is keen to partner with other Indian zoos to form a collaborative network built on a strategic partnership for capacity building, knowledge transfers and the development of zoo biology for the future of biodiversity conservation and animal welfare in the Indian Zooscape. With this article, we have tried to provide a glimpse of the established best practices of GZRRC. The objective is to initiate the conversation for adoption of universal best practices for captive animal management as a framework for Indian zoos as envisaged by the Central Zoo Authority.





JOURNEY OF CENTRAL ZOO AUTHORITY

Shri P.R. Sinha

Former Member Secretary,
Central Zoo Authority

1. What were the challenges faced by you when you became Member Secretary of the Central Zoo Authority (CZA)?

Major challenges faced by me during my tenure (1999-2004) included implementation of the National Zoo Policy 1998, closing non-viable zoos, improving skills of Zoo management in designing animal enclosures, improve the image of Zoos among people in India and abroad, and encourage ex-situ breeding programmes including complementing in-situ endeavours.

2. What were the strategies and initiatives taken by you for the improvement of zoos in India?

My first task was to bridge the gap between the objectives of the National Zoo Policy and perceptions of zoo management among the functionaries of state governments. With a view to bridge this gap, national level conferences/ meetings were organized to convince the zoo managers and the senior functionaries of the Government on the need for developing a perspective which was in sync with the policy. It was followed by revisiting the evaluation system which included defining the role of functionaries starting with the Zoo Director up to the Secretary of the department. This approach not only helped in easing some pressure on Zoo directors on issues falling beyond their domain in the management of zoos particularly those relating to financing, personnel etc. These were put as the responsibility of higher level functionaries and were clearly laid under conditional grant of recognition of the concerned zoo. A strategy of persuasion and pressure helped me in closing down a large number of mini



zoos and putting a quietus over the mushrooming of Zoos in India.

In the wake of the death of Tigers at Nandankanan Biological Park, Bhubaneswar, Hon'ble Supreme Court ruling on the establishment of new zoos, (which was facilitated by the then Solicitor General Mr. Harish Salve) helped a lot in regulating mushrooming of Zoos in India. Concurrently, a few initiatives were taken to bring about transformational change in zoo management. These included: the establishment of a design committee, induction of School of Planning and Architecture (SPA) in this committee, involvement of VCI (Veterinary Council of India) as a permanent member of CZA, initiating zoo internship programme by VCI in veterinary colleges as part of BVSC&AH programme, establishment of Laboratory for Conservation of Endangered Species (LaCONES) at Centre for Cellular and Molecular Biology (CCMB), Hyderabad, showcasing ex-situ – in-situ linkages through reintroduction of zoo bred red pandas from Padmaja Naidu Himalayan Zoological Park, Darjeeling to Singalila National Park, West Bengal formalizing a partnership with Indian Veterinary Research Institute (IVRI), Bareilly, revising Zoo rules and fixing minimum standard for feeding cell and enclosures, seizing wild animals from circuses and translocating them in high class rehab centres established at selected location across the country. These collateral efforts helped us improve the image of the zoo among the international conservation community.

3. Your views on the importance of Conservation breeding programmes for endangered species in Indian zoos?

The conservation breeding programme is one of the two major plank objectives of Zoos across the world, the second being complementing in-situ conservation by sensitizing people on the need to conserve nature.

4. In your opinion, how helpful is the upgradation of technical skills of zoo personnel?

Upgradation of technical skills to keep pace with emerging technology is important. However, this alone is not sufficient to achieve the main objectives of Zoos which is complementing in-situ conservation. Forging alliances and partnerships with organizations and institutions working on various aspects of conservation is required for synergy and moving ahead in this regard. Institutional partnerships which were forged in the past should be further strengthened by the CZA.

5. What made you remain associated with the Central Zoo Authority for such a long time?

I have been in wildlife management since 1982. Except for three years when I was posted outside this domain, I continued to remain in this field by choice.

My tenure at CZA was for five years. It was followed by my tenure for eight-plus years as Director, Wildlife Institute of India (WII), Dehradun. It helped me continue my association with CZA officially.

**ZOO IN FOCUS
INDIA**

Nandanvan ZOO & SAFARI

NAYA RAIPUR, CHHATTISGARH

Exploring NANDANVAN ZOO AND SAFARI

Established in 2016, Nandanvan Zoo and Safari has swiftly emerged as the premier tourist attraction in Chhattisgarh, garnering immense support from the local populace. Situated within the heart of Chhattisgarh's capital city, Naya Raipur, in the Raipur district, the complex spans an impressive 320.15 hectares (800 acres). This expansive expanse encompasses a sprawling 50-hectare (125-acre) zoo and an additional 2-hectare (5-acre) Rescue and Rehabilitation Center.

A prevailing focus at present revolves around providing ample room for captive animals and meticulously crafting naturalistic habitats. The

Central Zoo Authority of New Delhi has bestowed Nandanvan Zoo with the status of a medium-sized zoo, affirming its dedication to animal welfare.

Notable inaugurations have marked key moments in Nandanvan Zoo's journey. On the occasion of Chhattisgarh's 16th foundation day, observed on November 1, 2016, the Honorable Prime Minister of India, Shri Narendra Modi, inaugurated the Jungle Safari. Subsequently, on October 5, 2019, the Honorable Chief Minister of Chhattisgarh, Shri Bhupesh Baghel, unveiled the Nandanvan Zoo. Since these momentous events, the Nandanvan Zoo and Safari has steadily risen in prominence, celebrated for its meticulously planned safari experiences.

TEXT & PHOTOS

Director, Nandanvan Zoo & Safari,
Naya Raipur, Chhattisgarh

SAFARI EXPERIENCE

Within the confines of Nandanvan Safari, four distinct safaris await: Herbivore, Bear, Tiger, and Lion. These safaris have been meticulously designed to offer animals an environment akin to their natural habitats, granting them the utmost freedom. For visitors, this translates to an extraordinary opportunity to witness wildlife in close proximity, all from the comfort of specially designed vehicles.

Undoubtedly, the safaris stand as the centerpiece of Nandanvan's allure, captivating the hearts of its visitors and providing them with unparalleled encounters. Securely nestled within safari vehicles, guests embark on an adventure led by expert guides, offered to them at no additional charge. These guides, with a roster of 26 individuals hired on a daily basis from nearby villages, accompany visitors throughout the park. Their role extends beyond navigation; they divulge insights into the resident animals, shedding light on wildlife conservation and care efforts.

This informative journey not only brings visitors closer to the wildlife but also fosters a deeper understanding of the significance of preserving our natural world. At Nandanvan, education and awe-inspiring experiences seamlessly intertwine, promoting a heightened sense of nature conservation.

HERBIVORE SAFARI EXPLORATION

Spanning an expansive 75 acres of verdant, picturesque terrain, the Herbivore Safari is a haven for an array of remarkable creatures. This lush expanse provides a sanctuary for diverse species including the majestic Sambhar (*Cervus unicolor*), the elegant Spotted deer (*Axis axis*), the stately Nilgai (*Boselaphus tragocamelus*), and the graceful Blackbuck (*Antelope cervicapra*).



Within this captivating landscape lies a carefully curated visitor's path, extending for 2.5 kilometers. Complementing this, the safari features a thoughtfully designed kraal and two dedicated night shelters, catering to animals that require special attention and care. The inclusion of two water bodies and a network of five water channels ensures a continuous supply of water, creating a harmonious environment for the inhabitants.

As you enter the Herbivore Safari, a transformative experience awaits. The entrance has been meticulously crafted to transport you into an entirely different realm, a sensation that resonates profoundly with all who journey through it. To support the well-being of the animals, strategic water sprinklers have been strategically placed, providing hydration and protection against the sun's intensity.

The Herbivore Safari isn't just a visit; it's an immersion into a world where nature's beauty and animal well-being converge in perfect harmony.

BEAR SAFARI (*Melursus ursinus*)

Expanding across an extensive 50-acre region, the Bear Safari is thoughtfully protected by a chain-linked mesh fence, reaching a towering height of 5.5 meters. The fence design is ingenious, with the top inclined at an angle of 120 degrees and fortified with steel plates,



meticulously thwarting any attempts by sloth bears to climb over. This sanctuary has been crafted to accommodate a range of locomotory and foraging behaviors unique to bears. Moreover, it provides dedicated spaces for these creatures to sleep and rest comfortably

TIGER SAFARI (*Panthera tigris*)

Encompassing an exclusive 50-acre expanse, the Tiger Safari meticulously mirrors the authentic terrain favored by tigers within Nandanvan. This carefully fashioned landscape creates an environment akin to the true tiger habitat, offering a rare and cherished opportunity for optimal tiger sightings. The tigers roam within the dense forest, mimicking their natural behaviors, while visitors observe from specially designed caged vehicles. This results in an unparalleled and truly distinctive wildlife encounter.



LION SAFARI (*Panthera leo*)

The Lion Safari boasts protection through a 5.6-meter-high chain-link enclosure, characterized by its top section inclined at a 120-degree angle. This enclosure features a day kraal, night shelters, and a dedicated keeper's room. Stepping into the Lion Safari, visitors are immediately immersed in a wilderness ambiance, a unique experience that transports them from the city to the heart of a forest. Regular rotations of identified



lion groups ensure visitors consistently enjoy the thrill of encountering these magnificent creatures.

NANDANVAN ZOO



Encompassing a vast 50-hectare landscape, Nandanvan Zoo has been meticulously designed to house 43 diverse species of mammals and reptiles. Within its bounds, 28 purpose-built enclosures cater to various species, including White tigers, Asiatic lions, Royal Bengal tigers, Leopards, Himalayan black bears, and many more. Each enclosure is tailored to meet the specific needs of its inhabitants, fostering an environment that closely emulates their natural habitats to provide utmost comfort and authenticity.

Navigating this verdant expanse is facilitated by a 2.2 kilometer network of pathways, enabling visitors to seamlessly explore the exhibits. To ensure visitor convenience, various amenities such as resting areas, Pagodas, water stations, washrooms, first aid centers, battery-operated vehicles, benches, and shelters have been thoughtfully integrated.





The Living Desert ZOO AND GARDENS

TEXT & PHOTOS
The Living Desert
Zoo and Gardens,
Palm Desert,
California, USA

PALM DESERT, CALIFORNIA, USA

With a mission of desert conservation through preservation, education, and appreciation, The Living Desert Zoo and Gardens welcomes guests to learn about and appreciate the animals, plants, and ecosystems of the world's deserts. Conservation is essential to everything we do at The Living Desert, including on-site sustainability and resource reduction at the Zoo, international field conservation efforts, and local habitat restoration. Furthermore, by connecting guests to individual animals in our immersive habitats, we strive to create conservation advocates for nature and wildlife. Unique guest experiences are offered including giraffe feeding, a rhino encounter, private tours, and special events held throughout the year.

The Living Desert Zoo and Gardens has been a beloved institution in Southern California for over 50 years. An Association of Zoos and Aquariums (AZA) accredited zoo and botanical garden, The Living Desert represents the desert environments of North America, Australia, and Africa with more than 160 species, 1,200 protected acres, and miles of hiking trails. Among The Living Desert's numerous species are black rhino, giraffe, and cheetah, as well as jaguar, Mexican wolf, addra gazelle, and many more.

At the heart of The Living Desert is our emphasis on providing the best care possible for the animals that call the Zoo home. Each animal is an ambassador for its species, helping to share the story with every visitor. We are deeply committed to wildlife and

saving animals from extinction while ensuring optimal wellbeing for each of our animals. From expansive and engaging habitats to expert veterinary care and a dedicated care team, every animal has what it needs to thrive.



RESCUE AND REHABILITATION CENTER



A designated area of 2 hectares is dedicated to the Rescue and Rehabilitation Center, established under CAMPA funding during the year 2018-19. Serving as a beacon of compassion and care, this center plays a pivotal role in nurturing animals rescued from different corners of the state, offering them a new lease on life and well-being.



In March 2023, the forest department successfully conducted the rescue of a tigress from the Surajpur division. Following meticulous treatment, the tigress was successfully rehabilitated into her natural habitat at the Achanakmar Tiger Reserve. This achievement marked a significant milestone as the first collared tiger in the state of Chhattisgarh.

In conclusion, Nandanvan Zoo and Safari stand as a testament to the harmonious coexistence of nature and mankind's commitment to conservation. Through the meticulously designed safaris and enclosures, visitors are not just spectators, but participants in a journey that offers a glimpse into the untamed beauty of the animal kingdom. From the sprawling Bear Safari that honors the innate behaviors of sloth bears, to the captivating Tiger Safari that brings the elusive grace of tigers to the forefront, and the immersive Lion Safari that bridges the gap between urban life and the wild, each facet offers a unique and enriching experience.

The comprehensive Nandanvan Zoo, thoughtfully spread over 50 hectares,

is a haven for diverse species, offering a holistic approach to animal well-being. The enclosures, a masterpiece of design and functionality, reflect a commitment to replicating the creatures' natural habitats while fostering comfort and understanding. The carefully woven road network and visitor amenities cater to every need, ensuring that the journey of exploration is as fulfilling as the wildlife encounters.

Lastly, the establishment of the Rescue and Rehabilitation Center adds an extra layer of compassion, giving a second chance to animals in need and embodying the ethos of stewardship. Nandanvan stands as a beacon of conservation, not only imparting knowledge but also instilling a sense of responsibility towards preserving our planet's remarkable biodiversity.

In a world where the wild is increasingly threatened, Nandanvan Zoo and Safari serve as a beacon of hope, reminding us of our interconnectedness with the natural world and inspiring a collective effort to safeguard it for generations to come.





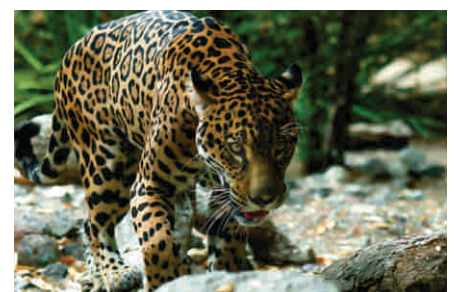
San Diego Zoo Wildlife Alliance and Edwards Airforce base. Thanks to a nutrient-rich diet, these tortoise hatchlings were able to quadruple in size and grow thicker shells – helping them to survive predation by ravens and coyotes once re-released back into the wild. With all 69 tortoises cleared for the next phase of the head start program, The Living Desert team is excited to see the next cohort of eggs and hatchlings this fall!

The Living Desert's conservation team works both locally and globally to heal degraded ecosystems and promote species conservation through habitat restoration and community-based conservation. Internationally, we are involved in more than 60 conservation projects in 12 different countries. To truly address the root of species decline, The Living Desert's community-based work focuses on how people can change their behavior to benefit nature and wildlife. Most recently completed in Tanzania, Zimbabwe, and Rwanda, the Zoo's Building Community Conservation Success social science training workshops are transforming the way that conservation work is being done around the world.

Locally, The Living Desert has embarked on an innovative new collaboration to help the critically endangered desert tortoise – California's state reptile and an essential part of desert ecosystems. To help improve their chances of survival in the wild, 69 juvenile desert tortoises were reared in a safe, temperature-controlled environment at The Living Desert as part of a collaborative head start program with

In November 2021, The Living Desert opened the innovative, four-acre Rhino Savanna habitat. This multi-species habitat – with the critically endangered black rhino being the signature species – has been a unique endeavor, showing us how the many species living together in this space can thrive. Each of the nine species that call this immersive habitat home are provided with enriching experiences, meaning no two days are alike. These types of experiences are an important part of creating an optimal level of wellbeing for the animals who live at the Zoo. By providing options and choices, the animals can utilize their cognitive skills in new ways every day.

As we look toward the future, The Living Desert is expanding and deepening conservation efforts with the coming Lion Ridge habitat. This cutting-edge habitat will feature African lions, a vulnerable species suffering from loss of habitat and prey, as well as human-wildlife conflict – including wildlife trafficking. The Living Desert team is excited to share the story of the African lion with Zoo guests upon its opening, estimated for Fall 2026.







PILIKULA BIOLOGICAL PARK

MANGALORE, KARNATAKA

TEXT & PHOTOS

(H J Bhandary, Director,
Pilikula Biological Park)

Pilikula the name derived from the local Tulu language 'Pili' means Tiger and 'Kula' means pond. It is said that in the past years Tigers were extensively found in this locality. The Tigers used to drink water from a huge pond found in the area hence the name "Pilikula". The natural tiger caves still exist in the locality.

Pilikula Biological Park was planned with the valuable guidance of Sri Puspaha Kumar IFS (Retd.) the then PCCF of Andhra Pradesh.

Pilikula Biological Park is a major component of Dr. Shivaram Karanth Pilikula Nisarga Dhama Society(R), a large zoo located in the outskirts of Mangaluru city. The zoo, along with its sister concerns caters to its visitors, a blend of naturalistic, scientific and cultural experiences. It is one of the prime tourist destinations of coastal Karnataka.

Pilikula Biological Park was inaugurated on 12.01.2001 by the Hon'ble Chief Minister of Karnataka. The park has since been recognized by the Central Zoo Authority. Zoo is run by the Dr. Shivaram Karanth Pilikula Nisarga Dhama Society(R). Maintenance of the zoo including development of infrastructure, feeding, health care of the animals is done by the Society with the help of

donation from institutions, corporate sectors, philanthropists and individuals. There is very little contribution from the Government sector. Pilikula Nisarga Dhama Society was established in April 1997. The Society comprises elected representatives and heads of important public institutions and is presided by the district in-charge minister. The Governing Council comprises of key Officers of various Government departments and is headed by the Deputy Commissioner of Dakshina Kannada District.

Vision is to develop a zoo of international standards in the Western Ghats region and to promote the conservation of fauna and flora of Western Ghats through education, scientific research, captive breeding and establishment of rescue centre as per the approved master plan. Pilikula is successful in keeping the expenditure to a minimum as there is no financial assistance from the government for the maintenance of the zoo. Since its inception, Pilikula has been in a strive towards converting entire area to resemble Western Ghats. Based upon this vision, the green belt project was initiated. As a part of the project, the vegetation cover of the zoo area comprising predominantly of exotic Acacia plants are being replaced with

endemic species of Western Ghats region in phased manner.

Pilikula Biological Park can be regarded as a model zoo that can be followed, in providing an animal friendly atmosphere. The zoo uses its vast land area to fulfill the species specific requirements of each animal by providing ample space for them to express their normal behaviour. Thus the simulation of their natural habitat has led not only to a mere physical wellbeing, but also a state of psychological wellbeing as well, implied by their successful reproduction. The zoo also has a conservation breeding centre of king cobra, Malabar squirrel and Mouse deer. Pilikula successfully bred King cobra in captivity and released more than 150 King Cobra in their habitat. The zoo also sets an imitable example concerning the day to day activities as it is run by a bare minimum number of staff when compared to other zoos in India which come under 'large zoo' category.

Pilikula Biological Park is a showcase of mini western ghats. Efforts are being made to construct the enclosures resembling their natural habitat and for creating awareness among people in the ex-situ conservation of Western Ghats fauna and flora.



केन्द्रीय विज्ञानपर प्राधिकरण
Central Zoo Authority



Central Zoo Authority

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