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ex-situ
UPDATES

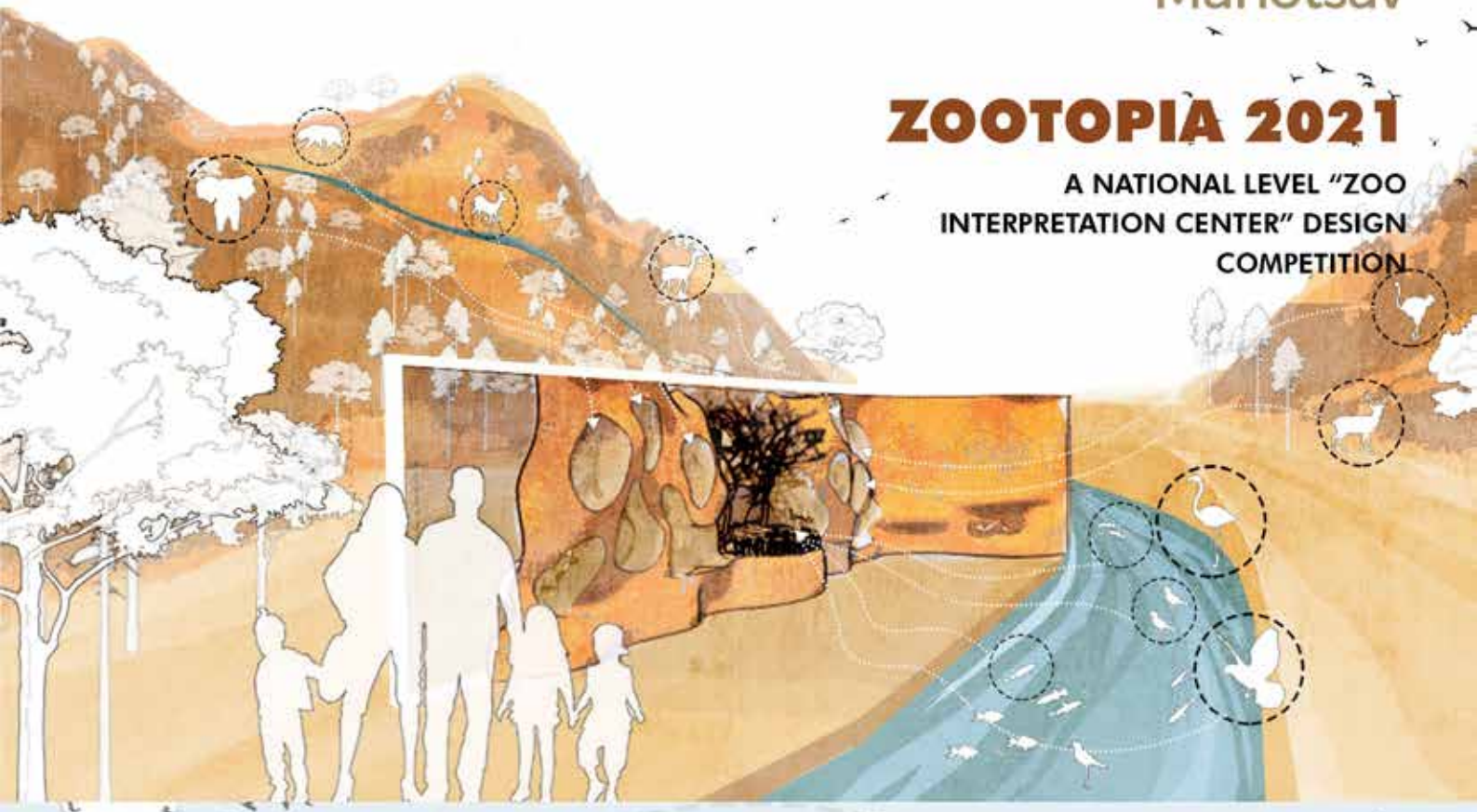
Central Zoo Authority
केन्द्रीय चिड़ियाघर प्राधिकरण

Ministry of Environment, Forest and Climate Change

The Quarterly Newsletter of
The Central Zoo Authority, New Delhi

CITIZEN SCIENCE
ZOOS AS HUBS FOR ENGAGING WITH PEOPLE

Azadi Ka Amrit Mahotsav



ZOOTOPIA 2021
A NATIONAL LEVEL "ZOO INTERPRETATION CENTER" DESIGN COMPETITION

PARCO NATURA VIVA – GARDA ZOOLOGICAL PARK, ITALY | NAWAB WAZID ALI SHAH ZOOLOGICAL GARDENS, LUCKNOW | TOP 10 ZOOS AS BIRDING HOTSPOTS

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Double Edition
Oct 2020 - March 2021

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On the Cover

From the design presentation of First Place Winners of ZOOTOPIA 2021

From the desk of the

Member Secretary

The challenges we have faced in the past year have made us stronger and continue to remind us what is most important in the zoological community- our connect with the people. As humans and wildlife come into increasing contact under the pressures of climate change, species recovery and zoonoses, it is urgent that we learn to facilitate holistic measures of coexistence with wildlife in shared multi-use landscapes.

What better way to enable people and wildlife to share landscapes, than to equip people with information. Using innovative science-based tools and strategies for outreach, zoos aim to foster transformation in both human attitudes and how wildlife and people interact, from conflict to coexistence.

With our outreach initiatives like Zootopia-2021, an open design competition in collaboration with AIM-NITI Aayog, to encourage young architecture and design professionals to delve into the realm of creating stunning zoo interpretation centres to over a 600 hours of awareness activities in 12 weeks of Azadi Ka Mahotsav until June, we are steadily moving in the right direction.

Margaret Mead, a cultural anthropologist said "Never doubt that a small group of thoughtful, committed citizens can change the world; indeed, it is the only thing that ever has." Zoos have a commitment to strengthen the people's connect to the environment and all wildlife and build a strong global community of conservation heros.

Dr. S. P. Yadav, IFS
Member Secretary
Central Zoo Authority

Tribute

PUSHP KUMAR

The innovative open zoo designer

Text
Dr. Rajesh Gopal, IFS (retd)
and inputs from the team at NZP, Hyderabad (Sri. A. Shankaran, OSD(Wildlife), Dr Naveen Kumar, Dy. Director (Vet) (Retd) & Sri. Sekhar Reddy, ACF (Retd)

Pushp Kumar (IFS, 1960 batch) was synonymous with zoo management in our country. He dedicated his entire service for wildlife by first working as Curator & Director of Nehru Zoological Park, Hyderabad for more than 25 years and also as Conservator of Forests and Chief Conservator of Forests (Wildlife) in the State of undivided Andhra Pradesh. Way back in the early 1980s, he would be training IFS probationers on "Carl Hagenback 's moated enclosures, bar-less displays, and zoos in natural settings ". His mastery over zoo science with years of field experience, abounding passion, and creativity made him a true architect to "design with nature".

Pushp Kumar has contributed immensely to foster ex-situ conservation in our country. There are several milestones to his credit, viz. designing of modern zoos at Visakhapatnam and Tirupati, strengthening management of the Hyderabad zoo, providing planning inputs in several zoos (Chandigarh, Chennai, Pune), apart from handling the Project Crocodile breeding and training centre at Hyderabad, during its formative years.

He contributed immensely to in-situ conservation also. A majority of 27 Protected Areas in the State was created and notified during his period. He ensured that all types of habitats including wetlands were represented in the PA network. A man of impeccable integrity who never punished his subordinates he also had a keen sense of humour. He shall be remembered for institutionalizing the concept of modern zoos, designed in near-natural setting.

Eminent dignitaries including former President of India Dr Zakir Hussain and Dr Salim Ali at the Hyderabad zoo

Top 10 Zoos as BIRDING HOTSPOTS

Data Source: ebird.org

Sakkarbaug Zoological Park, Junagadh

1


Girnar Nature Safari
46+ Species


Girnar Forest
162+ Species


Vadla Lake
158+ Species

National Zoological Park, New Delhi

2


NZP Delhi
186+ Species


India Gate
153+ Species


Sunder Nursery
128+ Species

Pilikula Biological Park, Mangaluru

3


Manjalpaade
203+ Species


Pilikula Zoo
50+ Species


Kenjar Wetlands
257+ Species

Sri Chamarajendra Zoological Gardens, Mysuru

4


Lingambudhi Lake
260+ Species


Mysuru Zoo
77+ Species


Kukkarahalli Lake
213+ Species

Nehru Zoological Park, Hyderabad

5


LaCONES, CCMB
100+ Species


Nehru Zoo Park
162+ Species


SVP National Police Academy
170+ Species

Assam State Zoo Cum Botanical Garden, Guwahati

10


Amchang WS
200+ Species


ASZBG
93+ Species


Deepor Beel
262+ Species

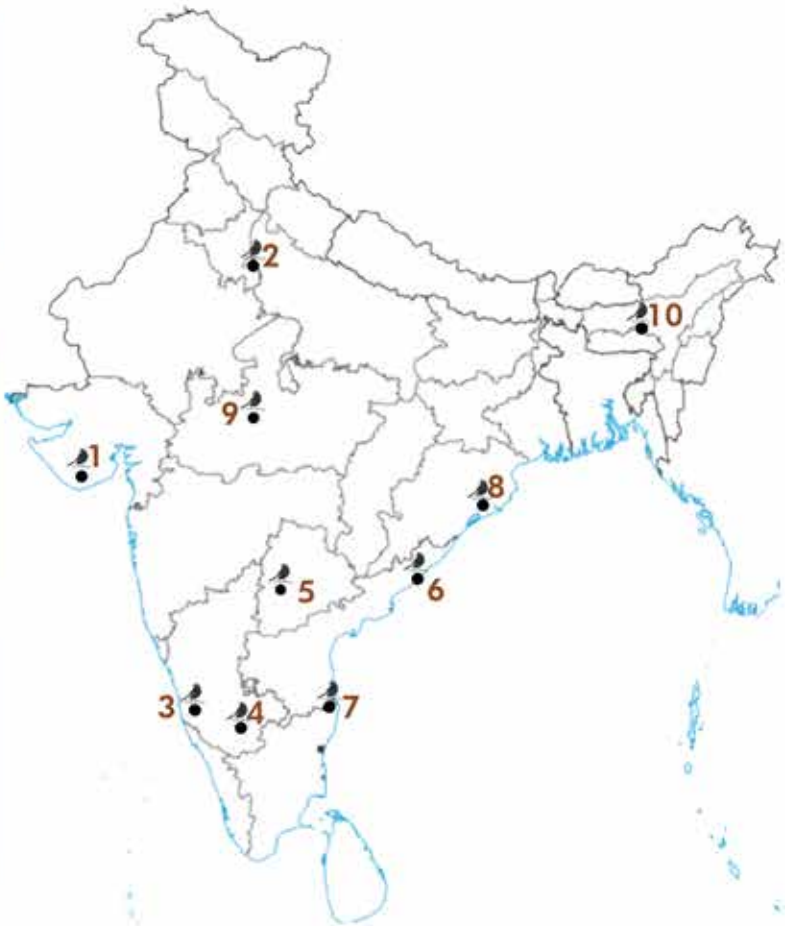
Van Vihar National Park and Zoo, Bhopal

9


Bhoj Wetland
253+ Species


Van Vihar
225+ Species


Kaliasot Dam
122+ Species



Indira Gandhi Zoological Park, Visakhapatnam

6


Kambalakonda WS
179+ Species


Meghadrigedda Reservoir
177+ Species

Arignar Anna Zoological Park, Chennai

7


Otteri Lake
83+ Species


AAZP
86+ Species

Nandankanan Biological Park, Bhubaneswar

8


Mundali
170+ Species


Naraj
135+ Species

Students watching birds at Mangalore University campus.
Photo: Deepak Naik

ZOOS AS HUBS FOR ENGAGING WITH PEOPLE THROUGH CITIZEN SCIENCE.

Text
Dr. Suhel Quader,
Scientist, Education and Public Engagement,
Nature Conservation Foundation

The need to engage the larger public on matters to do with wildlife and biodiversity, and their conservation, has never been greater. With high visitor footfall, strong staff expertise, and abundant green habitats, Zoos in India are uniquely placed to lead the effort for in-person public engagement and education.

In parallel, all through the world, we see a tremendous growth of interest in citizen science, in which members of the public contribute to the understanding of the world around us. Citizen Science efforts cover a huge span: from astronomy all the way to the biochemistry of proteins. However, it is probably in the realm of ecology and biodiversity that citizen science sees the most participation and generation of information.

In this article, I explore how Zoos in India can use citizen science to effectively further their mandate for public engagement and education while at the same time generating fascinating baseline information on nature and wildlife.

Examples of Citizen Science

General Biodiversity Platforms

Platforms like India Biodiversity Portal (indiabiodiversity.org) and iNaturalist (inaturalist.org) are built for participants to take photos (often with their phones) of any species and upload through a simple smartphone or computer to online databases, where they join millions of other such observations. From a scientific point of view, the millions of observations generated from these platforms help provide a snapshot of the occurrence and distribution of a large number of species. Narrowing down, they help automatically generate a checklist of species for a given country, state, city or even specific location.

From a public engagement and education perspective, such platforms can be extremely useful. An increasing number of young people with a spark of interest

Ashy Prinia, a familiar and widespread species across India that has increased tremendously over the past 25+ years according to the State of India's Birds 2020 report. Photo: Ramesh Desai

in biodiversity are honing their skills through these platforms. One common feature is 'community identification', where anyone can suggest the ID of species in the uploaded photographs. By learning from how experienced participants ID species, and by contributing their own ID suggestions to the photos of others, enthusiasts rapidly build their identification skills.

A common group activity that serves both scientific and educational goals is a 'bio-blitz', in which interested children or adults are mobilised to come together, thoroughly explore a location or habitat, taking photos of everything they see and upload them to one of these platforms. This results in a rapid survey of the biodiversity of the area, all of which is automatically collated and documented on the website, with no further effort from the organisers.

Specialised platforms

There are also a large number of more specialised projects such as eBird and SeasonWatch.

eBird (ebird.org) is a platform for birdwatchers to document their observations (more specifically, their bird lists) online. Through the course of their birding, birdwatchers generate a large number of such lists. At its core, eBird is an online notebook for birdwatchers to document and keep track of their lists and observations.

When the observations of many birdwatchers are collated in this way onto a common platform, basic patterns of distribution, seasonality and abundance of birds become evident through the publicly available outputs on the website. In addition, for any location (a 'hotspot') with a reasonable amount of eBird a comprehensive checklist becomes automatically available.

Researchers have also used eBird data to generate conservation outputs. For example, 10 institutions collaborated to use eBird information to bring out State of India's Birds 2020 (stateofindiasbirds.in), the first data-driven assessment of the conservation status of almost all regularly occurring species in India (867 species). The report found a mixture of good news (House Sparrow stable, Indian Peafowl increasing) and cause for alarm (many shorebirds and raptors species declining).

Children hugging one of their SeasonWatch trees in a school in Kerala. Photo: Swati Sidhu

Although widespread across India, the Short-toed Snake Eagle shows clear signs of strong decline over the past decades, continuing over the last few years as well. Consequently it is classified as of High Conservation Concern in the State of India's Birds 2020 report. Photo: Albin Jacob

These sorts of outputs become possible because of the immense popularity of birdwatching: globally eBird holds over 1 billion observations of birds. In India, 25,000 birdwatchers have contributed over 1 million lists, totalling some 25 million observations. eBird in India has a dedicated portal, eBird-India (ebird.org/india), which is customized and managed by Bird Count India (birdcount.in), an informal partnership of a large number of bird-related organisations and groups.

The other example is SeasonWatch (seasonwatch.in), which has a very specific purpose: to document the seasonality of flowering, fruiting, and leafing of Indian trees to understanding how this varies across the country and across time (eg, as the climate changes). The core activity in SeasonWatch is to select one or more individual trees and observe their flowers, fruits and leaves once a week, uploading those observations through the SeasonWatch website or Android app.

Through SeasonWatch, a number of interesting and unexpected patterns have emerged. For example, in Kerala, Amaltas (Cassia fistula) not only has a peak in flowering in April (during the time of the Vishu festival), but a few individuals with flowers can be seen all through the year - a phenomenon that residents say is only very recent.

These activities are ideal to begin discussions with children (or adults) about climate change, how nature is interconnected, and more.

Citizen Science in Zoos

How can Zoos integrate citizen science ideas into their own outreach and education work, and what benefits can flow from this?

Citizen Science Activities

Starting with the notion of 'learning by doing', several opportunities come to mind.

- As part of a nature walk, participants can look for interesting plants or animals (e.g. butterflies, spiders) and photograph them with their smartphone. The identity of these species (and any interesting natural history tidbits) can be discussed during the session itself, but if participants upload their photos to a general biodiversity platform, the pictures also contribute to a permanent documentation of the Zoo's flora and fauna. Through the ensuing online comments and discussions, participants also learn more; and Zoo educators can continue their contact with the most interested participants through the platform.
- An extension of the idea above is to organise regular 'bioblitzes', inviting participation from the public. These result in a snapshot of the presence of different species in an area. Over time, the list of documented wild species in the Zoo premises will grow, and seasonal and annual changes will be revealed.

- Birds are a particularly popular taxon because of their high visibility and song. Educational programmes could include birdwatching tours of the Zoo, where lists of birds are made and their natural history discussed. Uploaded to a platform such as eBird, such lists could be aggregated for the Zoo 'hotspot' location, contributing to documentation as well.
- A tree-oriented set of outreach and educational programmes could focus on observing the flowering, fruiting and leafing of different species, and uploading them to SeasonWatch. In addition, the Zoo could designate a set of individual trees as 'season sentinels', and ensure that their phenology is documented every week, either by visitors or by staff.

Citizen Science outputs

Such citizen science efforts would provide a number of opportunities for Zoos to showcase their efforts along these lines.

- Signage and other information on the number and diversity of planted and wild species in the Zoo. The fact that this is generated by members of the public rather than some anonymous set of experts could be highlighted to visitors.
- Information on the wild birds that make their home in the Zoo. This would result in not just a simple checklist, but also seasonal occurrence of each species and even how abundances change with the season.
- With the 'season sentinel' tree idea described above, it would be interesting to mark each such tree with signage. For example:

My name is Maya, I am a neem tree
I am about 20 years old
My flowers usually emerge in April, a month earlier than my neighbour Anjan
You can see a chart of my flowering, fruiting and leafing below
Text this number to find out how you can help understand how the seasons affect me

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Conclusion

There is immense scope for including citizen science in the outreach and education activities going on in Zoos. A slight realignment may be needed so that the focus is on (a) active engagement by the target audience, child or adult, and (b) ensuring that information generated through these activities is contributed and collated (using through platforms like those above) to demonstrate to participants that their efforts are contributing to something larger. Globally, children and adults report increased levels of enjoyment, satisfaction and skill when engaging in citizen science activities. These outcomes can greatly further the outreach and education goals of Zoos in India.

eBird 'hotspot' aggregate page for Delhi Zoo. 186 species have been reported from 335 bird lists from the Zoo.
Link

eBird 'bar charts (seasonal abundances) of four species based on 23,750 bird lists uploaded from Delhi. The height of the bars reflects the frequency of reporting of the species; fine details of the migration patterns are visible from this.
Link

Species view of iNaturalist aggregate page for Bangalore city.
Link

Azadi ka Amrit Mahotsav
'Conservation to coexisence – The people connect'

Compiled by
Arundhati Mohanty,
Senior Research Fellow,
Central Zoo Authority

The Government of India to commemorate 75 years of India's independence on the 15th of August 2022 launched the 'Azadi ka Amrit Mahotsav'. This is a 75 week-long celebration that commenced on the 12th of March 2021. It was flagged off by the Hon'ble Prime Minister of India, Shri Narendra Modi from Sabarmati Ashram to celebrate and showcase a progressive India and the glorious history of its people, culture, and achievements.

The Central Zoo Authority, a statutory body of the Ministry of Environment, Forest, and Climate change has taken this celebration forward through a massive conservation outreach campaign titled "Conservation to Co-existence-The people connect".

As part of this campaign, 75 species of conservation priority [Species 75] and 75 zoos [Zoo 75] in the 10 biogeographic zones of India will be highlighted by showcasing one species and zoo each week. During the Amrit Mahotsav week in the zoo, they are encouraged to engage with various stakeholders through targeted outreach activities focused on the species highlighted during the particular week. So far (up to July 2021), 20 species and zoos have been brought into the limelight with the achievement of over 600 hours of awareness outreach.

The Azadi ka Amrit Mahotsav celebration was formally inaugurated (during Week 1) at the Veermata Jijabai Bhonsale Udyan and Zoo, Mumbai with a mega-event wherein delegates from various walks of life interacted with the media and audience on this initiative. The inaugural showcased the zoos 5G -(Great Green Grass Gentle Giant concept) that was conceptualised and organised and painted by young divyang (persons with disabilities) artists with support from Shreerang Charitable Trust. The use of the 'Rang Gandha'

concept to paint a multi-coloured elephant by visually imparted children was an exceptional feat. Over the past 20 weeks, public engagement has been done through a series of activities which include guided zoo tours, online competitions, documentary screenings, and photo exhibitions.

A few highlights from the journey include artwork of the Malabar-grey hornbill created with coconut palm leaves at the State Museum and Zoo, Thrissur, Kerala to inculcate the tradition of the sustainable use of natural resources. Media briefing sessions were organized by Sanjay Gandhi National Park and Zoo to sensitize the representatives from the Media to the triumphs and challenges of working in zoological institutions and the conservation action that the zoos are involved in. A one-day training organized for keepers and frontline forest staff by Zoological garden, Thiruvanathapuram, and Bondla Zoo. The Arignar Anna Zoological Park, Vandalur partnered with broadcast media for further awareness of this initiative. Online talks by species experts are being organized in association with different organizations and institutes on ecology and biology of the species in focus informing the audience on the insights of research and on-ground conservation-action that happens on the species and its habitat.

Collaborations including **Jan Bhagidari** has been achieved through the involvement of scientific organizations, NGOs and Civil society organizations who have supported the zoos in conducting the outreach activities. It is expected that through the Mahotsav, people have the opportunity to get acquainted with the scientific rigour that is involved in the designing and planning of zoos and gain a behind-the-scene perspective of the efforts that are in place to ensure the best practices of wild animal welfare and conservation. A sensitized society will ensure harmonious co-existence and connect with nature reinstating our faith and culture of conservation.


Veermata Jijabai Bhonsale Udyan and Zoo, Mumbai


Sanjay Gandhi National Park and Zoo, Mumbai


Rajiv Gandhi Zoological Park and Wildlife Research Center, Maharashtra


State Museum and Zoo, Kerala




Source: Creative Commons

S No	Week	Species	Zoo in focus
Western Ghats			
1	March 15 to March 21, 2021	Asian Elephant *Elephas maximus*	Veermata Jijabai Bhonsale Udyan and Zoo, Mumbai, Maharashtra
2	March 22 to March 28, 2021	Rusty-spotted cat *Prionailurus rubiginosus*	Sanjay Gandhi National Park and Zoo, Mumbai, Maharshtra
3	March 29 to April 4, 2021	Indian Giant Squirrel *Ratufa indica*	Rajiv Gandhi Zoological Park and Wildlife Research Center, Maharashtra
4	April 5 to April 11, 2021	Gaur *Bos gaurus*	Bondla Zoo, Goa
5	April 12 to April 18, 2021	Malabar Grey-Hornbill *Ocyceros griseus*	State Museum and Zoo, Kerala
6	April 19 to April 25, 2021	Four-horned Antelope (Chousingha) *Tetracerus quadricornis*	Kakatiya Zoological Park, Warangal, Telangana
7	April 26 to May 2, 2021	Lion-tailed Macaque *Macaca silenus*	Arignar Anna Zoological park, Tamil Nadu
8	May 3 to May 9, 2021	Nilgiri Langur *Trachypithecus johnii*	Thiruvananthapuram Zoo, Kerala
9	May 10 to May 16, 2021	Indian Chevrotain *Moschiola indica*	Nehru Zoological Park, Hyderabad, Telangana
10	May 17 to May 23, 2021	Grey Slender Loris *Loris lydekkerianus*	Sri Chamarajendra Zoological Gardens, Mysuru, Karnataka
11	May 24 to May 30, 2021	King Cobra *Ophiophagus hannah*	Dr. K.Shivarma Karanth Pilikula Biological Park, Mangalore, Karnataka
Deccan Plateau			
12	May 31 to June 6, 2021	Bengal Tiger *Panthera tigris tigris*	Gorewada International Zoo
13	June 7 to June 13, 2021	Grey Junglefowl *Gallus sonneratii*	Sri Venkateswara Zoological Park, Andhra Pradesh
14	June 14 to June 20, 2021	Dhole *Cuon alpinus*	Indira Gandhi Zoological Park, Andhra Pradesh

S No	Week	Species	Zoo in focus
15	June 21 to June 27, 2021	Wild Water Buffalo *Bubalus arnee*	Nandanvan Jungle Safari, Chattisgarh
16	June 28 to July 4, 2021	Malabar Banded Swallowtail - *Papilio liomedon*	Bannerghata Biological Park, Karnataka
17	July 5 to July 11, 2021	Swamp Deer *Rucervus duvaucelii*	Van Vihar National Park, Bhopal, Madhya Pradesh
18	July 12 to July 18, 2021	Indian Pangolin *Manis crassicaudata*	Nandankanan Biological Park, Odisha
19	July19 to July 25, 2021	Sloth Bear *Melursus ursinus*	Bhagwan Birsa Biological Park, Ranchi, Jharkhand
20	July 26 to August 1, 2021	Blackbuck *Antilope cervicapra*	Tata Steel Zoological Park, Jamshedpur
Desert			
21	August 2 to August 8, 2021	Chinkara *Gazella bennettii*	Machia Biological Park, Jodhpur, Rajasthan
22	August 9 to August 15, 2021	Indian Wolf *Canis lupus pallipes*	Nahargarh Biological Park, Jaipur, Rajasthan
23	August 16 to August 22, 2021	Indian crested Porcupine *Hystrix indica*	Sajjangarh Biological Park, Udaipur, Rajasthan
24	August 23 to August 29, 2021	Great Indian Bustard/ Striped Hyena - *Ardeotis nigriceps/ Hyena hyena*	Kota Zoo, Rajasthan
Semi Arid			
25	August 30 to September 5, 2021	Pythons (Rock, reticulate, burmese) - *(Python molurus, Python bivittatus, Malyapython reticulatus)*	Rajkot Municipal Zoo, Rajkot, Rajasthan
26	September 6 to September 12, 2021	Indian Star Tortoise *Geochelone elegans*	Kamla Nehru Zoological Park, Sundarvan, Ahmedabad, Gujarat
27	September 13 to September 19, 2021	Asiatic Lion *Panthera leo leo*	Sakkarbaug Zoo, Gujarat

S No	Week	Species	Zoo in focus
28	September 20 to September 26, 2021	Smooth Coated Otter *Lutrogale perspicillata*	Dr Shyamaprasad Mukherjee Zoological Park, Surat, Gujarat
29	September 27 to October 3, 2021	Asiatic Wild Ass/Whale Shark - *Equus hemionus khur/Rhincodon typus*	Sardar Patel Zoological Park, Kevadiya
30	October 4 to October 10, 2021	Indian Fox *Vulpes bengalensis*	Ambardi Wildlife Interpretation Zone (Ambardi Safari Park)
31	October11to October 17, 2021	Greater Flamingo *Phoenicopterus roseus*	Sayaji Baug Zoo, Vadodara, Gujarat
32	October 18 to October 24, 2021	Bar headed Geese/ Lesser Florican - *Anser indicus/ Sypheotides indicus*	Indroda Nature Park, Geer Foundation, Gujarat
33	October 25 to October 31, 2021	Peafowl *Pavo cristatus*	Pipli Zoo, Haryana
34	November 1 to November 7, 2021	Baya weaver and house sparrow - *Ploceus philippinus/Passer domesticus*	Rohtak Zoo, Haryana
35	November 8 to November 14, 2021	Nilgai *Boselaphus tragocamelus*	Deer Park Motibagh (Patiala Zoo)
36	November 15 to November 21, 2021	Owl Species (Barn owl and Eurasian Eagle owl) - *Tyto alba./Bubo bubo*	Mahendra Chaudhury Zoological Park, Chhatbir, Punjab
37	November 22 to November 28, 2021	Spotted Deer (Chital) *Axis axis*	Deer Park, Bir Talab, Bhatinda, Punjab
38	November 29 to, December 5, 2021	Raptors (Northern Goshawk) - *Accipiter gentilis*	Ludhiana Zoo, Punjab
Islands			
39	December 6 to December 12, 2021	Crab-eating Macaque* *Macaca fascicularis*	Biological Park, Chidiyatapu, Andaman and Nicobar Islands
Coasts			
40	December 13 to December 19, 2021	Salt Water Crocodile *Crocodylus porosus*	Madras Crocodile Bank Trust/ Centre For Herpetology, Tamil Nadu
41	December 20 to December 26, 2021	Ganges Softshell Turtle *Nilssonia gangetica*	Kurumbapatti Zoological Park, Tamil Nadu
42	December 27 to January 2, 2022	Monitor Lizard *Varanus salvator*	Alipore Zoological Garden, West Bengal
43	January 3 to January 9, 2022	Viper (Russell's Viper and saw scaled viper)- *Daboia russelii/Echis carinatus*	Chennai Snake Park, Tamil Nadu
North East			
44	January 10 to January 16, 2022	Clouded Leopard *Neofelis nebulosa*	Sepahijala Zoological Park, Tripura
45	January 17 to January 23, 2022	Pygmy Hog *Porcula salvania*	Assam State Zoo Cum Botanical Garden, Assam
46	January 24 to January 30, 2022	Northern Pig-tailed macacque - *Macaca leonina*	Aizawl Zoo, Mizoram
47	January 31to February 6, 2022	Slow Loris *Nycticebus bengalensis*	Nehru Park Zoo, Danakgre,Tura, Meghalaya
48	February 7 to February 13, 2022	Sangai *Rucervus eldii eldii*	Manipur Zoological Garden, Manipur
49	February 14 to February 20, 2022	Great Hornbill *Buceros bicornis*	Mini Zoo, Roing, Arunachal Pradesh
50	February 21to February 27, 2022	Asian Brown Tortoise *Manouria emys*	Lady Hydari Park Animal Land (Meghalaya Zoo)
51	February 28 to March 6, 2022	Hoolock Gibbon *Hoolock hoolock*	Biological Park, Itanagar, Arunachal Pradesh
52	March 7 to March 13, 2022	Blyths Tragopan* *Tragopan blythii*	Nagaland Zoological Park, Nagaland
53	March 14 to March 20, 2022	Greater One-Horned Rhino - *Rhinoceros unicornis*	CWRC & CBRC (Rescue Centre)
Himalayan			
54	March 21to March 27, 2022	Red Panda *Ailurus fulgens*	Padmaja Naidu Himalayan Zoological Park, Darjeeling
55	March 28 to April 3, 2022	Himalayan Tahr *Hemitragus jemlahicus*	Dhauladhar Nature Park, Himachal Pradesh
56	April 4 to April 10, 2022	Himalayan Musk Deer *Moschus leucogaster*	Himalayan Nature Park, Kufri Himachal Pradesh
57	April 11 to April 17, 2022	Himalayan Monal *Lophophorus impejanus*	Nehru Phesantary, Manali, Himachal Pradesh
58	April 18 to April 24, 2022	Himalayan Black Bear *Ursus thibetanus*	Renuke Mini Zoo, Himachal Pradesh
59	April 25 to May 1, 2022	Western Tragopan *Tragopan melanocephalus*	Sarahan Pheasantry, Himachal Pradesh
60	May 2 to May 8, 2022	Bharal *Pseudois nayaur*	Himalayan Zoological Park, Bulbuley, Sikkim
61	May 9 to May15, 2022	Goral Naemorhedus goral	Malsi Deer Park, Dehradun, Uttarakhand
62	May 16 to May 22, 2022	Muntjac *Muntiacus muntjac*	Pt. Govind Ballabh Pant High Altitude Zoo, Uttarakhand
Trans Himalaya			
63	May 23 to May 29, 2022	Hangul *Cervus elaphus hanglu*	Jambu Zoo (Shivalik Biological Park), Jammu & Kashmir
Gangetic Plains			
64	May 30 to June 5, 2022	Mugger/ Marsh Crocodile - *Crocodylus palustris*	Nawab Wazid Ali Shah Zoological Garden, Uttar Pradesh
65	June 6 to June 12, 2022	Sarus Crane *Antigone antigone*	Shaheed Ashfaq Ullah Khan Prani Udyaan, Gorakhpur, Uttar Pradesh
66	June 13 to June 19, 2022	Red-crowned Roof Turtle *Batagur kachuga*	Kanpur Zoological Park, Uttar Pradesh
67	June 20 to June 26, 2022	Gangetic River Dolphin/ jungle Cat - *Platanista gangetica*	Sanjay Gandhi Biological Park, Bihar
68	June 27 to July 3, 2022	Grey Hornbill *Ocyceros birostris*	Marble Palace Zoo, Kolkata, West Bengal
69	July 4 to July 10, 2022	Lesser Adjutant Storkc *Leptoptilos javanicus*	Jungle Mahal Zoological Park, Jhargram, West Bengal
70	July 11 to July 17, 2022	Gharial *Gavialis gangeticus*	Rasikbeel Mini Zoo, Coochbehar, West Bengal
71	July 18 to July 24, 2022	Hog Deer *Hyelaphus porcinus*	Adina Deer Park, West Bengal
72	July 25 to July 31, 2022	Fishing Cat *Prionailurus viverrinus*	North Bengal Animal Ark, West Bengal
73	August 1 to August 7, 2022	Vulture Species *Gyps spp.*	Vulture Conservation Breeding Centre, Pinjore, Haryana
74	August 8 to August 14, 2022	Indian Leopard *Panthera pardus*	Etawah Lion Safari Park, Uttar Pradesh
Culmination of all zones			
75	August 15, 2021	Indian flora and fauna (Peafowl, Tiger, Elephant, Banyan Tree, Dolphin, King Cobra, Lotus) - *Pavo cristatus, Panthera tigris ssp tigris, Platinista gangetica, Ophiophagus hannah, Ficus bengalensis, Nymphea nuchali*	National Zoological Park, Delhi

Source: Creative Commons

News & Events

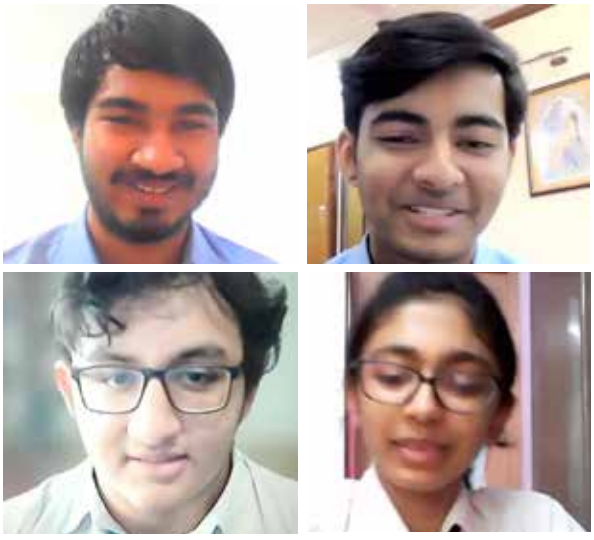
June 3 - 4

Felid Symposium

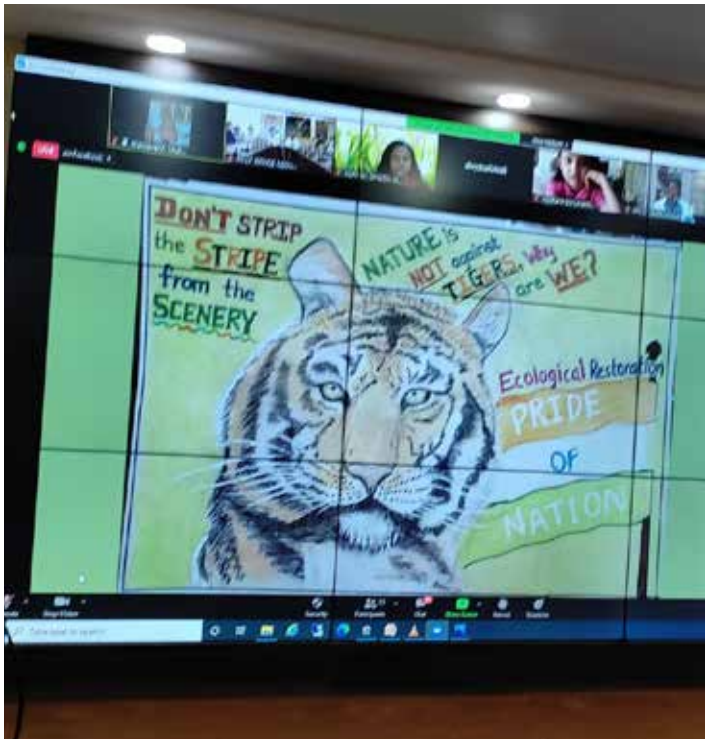
On the occasion of the ongoing Azadi Ka Amrit Mahotsav and celebration of World Environment day, abstracts were invited for the virtual symposium on '"Management of large felids in zoos and Protected Areas' on 3rd and 4th June 2021. The primary aim of the symposium was to invite practitioners, academia, veterinarians and researchers to share best practices among peer learning groups on post-pandemic care for large felids in captivity and in Protected Areas.

June 5

The theme for this year's World Environment Day 2021 was Ecological Restoration wherein special events across all zoos were centred around ' Tigers as flagbearers of Ecological restoration'. Balasaheb Thackeray Gorewada International Zoological Park, Nagpur in collaboration with CZA and Saevus India organised a week-long outreach and awareness program for school children.



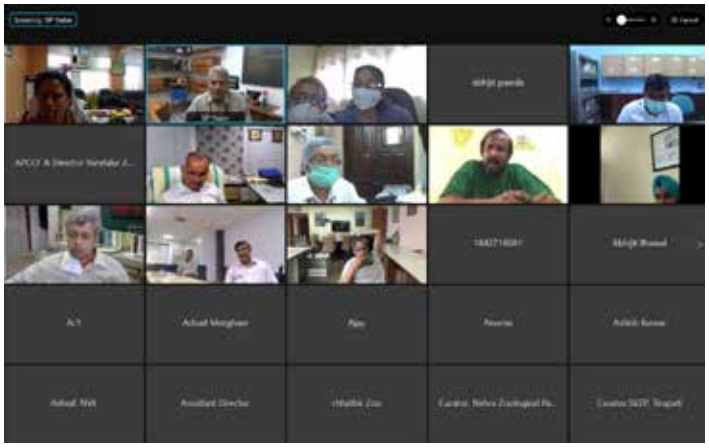
The competitions ranged from painting and poster competitions to a unique interschool 'Ecoachievers Debate' wherein 8 schools battled on thought-provoking topics of environment & wildlife conservation. The debate was arbitrated by eminent wildlife conservationists. The winners of the #ecoachievers debate were Mr. Arunav Ghosh & Ms. Prithika Deb of DPS Newtown, Kolkata. Best speaker was jointly awarded to Mr. Ishwar Sarda & Eshan Sarda of Centre Point School Nagpur.

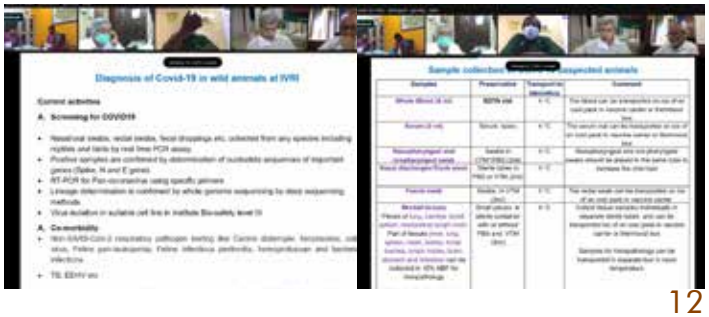


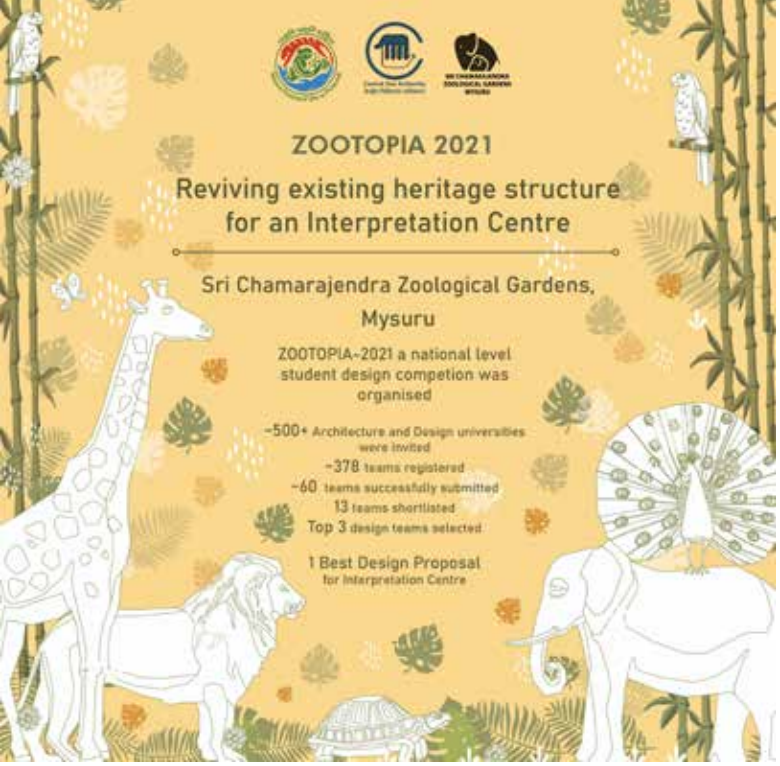
June 18

Preparedness for combating SARS-CoV2

Meeting with zoos housing felids and laboratories testing SARS-CoV2 was organised to share protocols for diagnosis and management of disease in captive wild animals. An easy to use pictorial guideline for covid-19 investigation in captive wild animals- a compilation of FAQs and sample collection protocol was also prepared by CCMB and released during the meeting.







ZOOTOPIA 2021

Text:
Gargi Roy,
Urban Designer and Planner

Interpretation is a communication process that forges emotional and intellectual connections between the interests of the audience and the inherent meanings in the resource.

To further the cause of innovation and out of box approach to nature interpretation in zoos, CZA in collaboration with NITI Aayog-Atal Innovation Mission (AIM) organised a national level design competition (ZOOTOPIA-2021). The competition brief was to design an Interpretation Centre in an Indian zoo. The prize money (for the top three winning teams) was sponsored by Union Bank of India as part of its CSR. The model prototype was to be outfitted with retrofitting of an existing building for the Sri Chamarajendra Zoological Gardens, Mysuru, Karnataka.

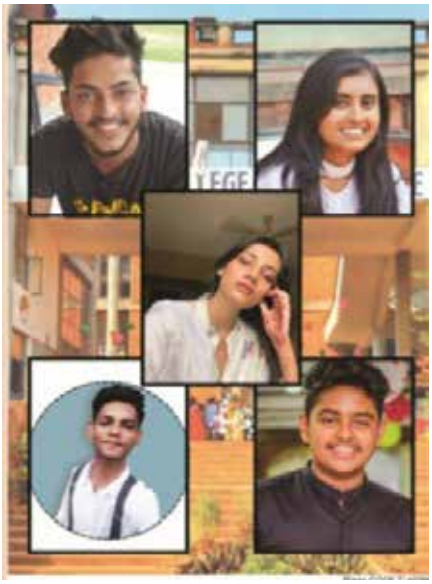
The effort was to promote holistic interpretation within Indian zoos focusing on bridging the gap between animals, nature and humans. Zoo exhibits are integral parts of the educational landscape. Their aim being, to reveal meanings and relationships through the use of experience rather than communicating only factual information. Interpretation is not "teaching" but a journey of adventure. India has a pool of young talent, who can be encouraged to come up with out-of-box solutions and innovation based on knowledge and skills.

A series of 7 webinars on wildlife, landscape design, climate change, resilience in zoos were organised with 23 subject matter experts from varied backgrounds and recognised organisations such as Centre for Environmental Planning and Technology (CEPT), The World Bank, Wildlife Institute India, IIT Delhi, School of Planning and Architecture (Delhi and Bhopal campus), INTACH- India, DRONAH Foundation etc. The specialised lectures commenced on 29th April 2021 and were held each week till 3rd June 2021.

The webinars were planned to spread the importance of zoo design and planning and also communicate the need for and importance of a holistic view and a multidisciplinary approach.

The idea of this open design competition was very well received, and more than 500 architecture and design institutions were invited to participate in the competition, 300+ design teams successfully registered for the competition and the competition received more than 60 team entries. 13 entries were selected for an online adjudication. 5 expert members from diverse professional backgrounds in architecture, heritage, design, and planning were selected as jury members. Their key responsibility was to evaluate the design entries and select the best 3 designs.

The formal announcement of the 3 winning groups and 10 Honourable mentions, took place during the closing ceremony that was held on 30th June 2021. The 3 winning groups were given cash awards and certificates will be given for the10 Honourable mentions. As part of the closing ceremony a final competition video was also released showcasing the entire process.



First Prize
Piloo Mody College of Architecture, Cuttack

Second Prize
School of Planning and Architecture, New Delhi

Third Prize
NMIMS Balwant Sheth School of Architecture, Mumbai

The top 3 award winning entries along with their details are as below :

The first place was secured by a team composed of Aman Bansal, Ankita Jaiswal, Durgesh Nandini, Jagdish Samal and Prateek Routray from Piloo Mody College of Architecture, Odisha . The main concept idea tried to propose minimal invasive design, by integrating the heritage architectural style and the essence of the zoological park.

The team SAHYADRI (comprising of KK Divyashri, Kshitija Prasad, Akansha Gautam, Kritika Lakhe and Shajahan AK) from School of Planning and Architecture, New Delhi, secured second place by proposing a perfect blend of tradition and technology as the core design idea of the Nature Interpretation centre. The proposal was mainly inspired from the stories of western ghats, starting from the geography, to mythology stemming from it, evolution, its wildlife and the various threats to it.

Third place was secured by a team (comprising Namrata Mistry, Shripriya Agarwal, and Suthirtha Das Gupta) from NMIMS Balwant Sheth School of Architecture, Mumbai. The team took the design inspiration from Reptile skin. Their design proposal "Chameleon' explored the possibilities of creating a highly adaptive, tactile, intuitive and user friendly interface; exhibition panels for the Interpretation Centre at Sri Chamarajendra zoological gardens. planning, circulation and interface helped visually and physically impaired to experience the information centre in its totality.

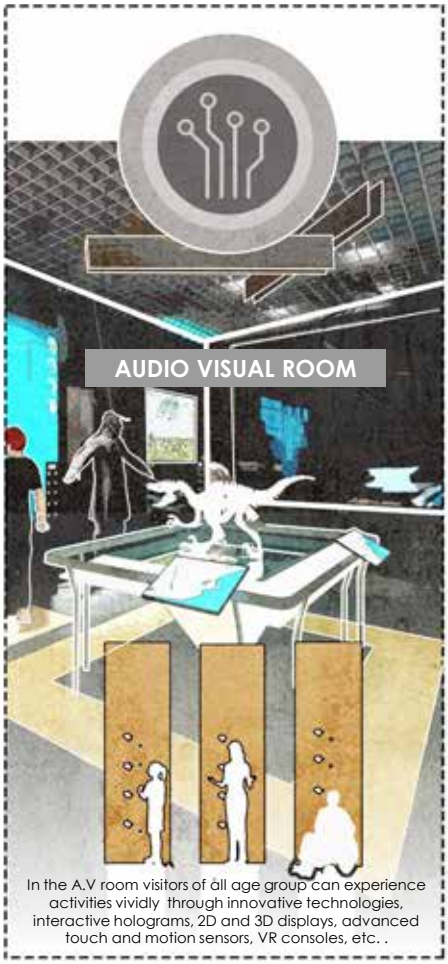
Apart from these top three designs, there were 10 designs that were shortlisted for the Honourable mentions from the following prestigious universities/ colleges of India.

- National Institute of Technology, Calicut, Kerala
- School of Planning and Architecture, Bhopal, Madhya Pradesh
- IIT (BHU), Varanasi, Uttar Pradesh
- Amity University Noida, Uttar Pradesh
- VNIT, Nagpur, Maharashtra
- Anna University, Chennai, Tamil Nadu
- School of Planning and Architecture Bhopal, Madhya Pradesh
- School of Planning and Architecture Delhi
- GI Bajaj Group of Institutions, Mathura, Uttar Pradesh
- KMEA College of Architecture, Kerala

As Albert Einstein had said; "**Look deep into nature and then you will understand everything better"**, Zootopia has set an example to live and work with nature.

HISTORICAL ARCHIVE

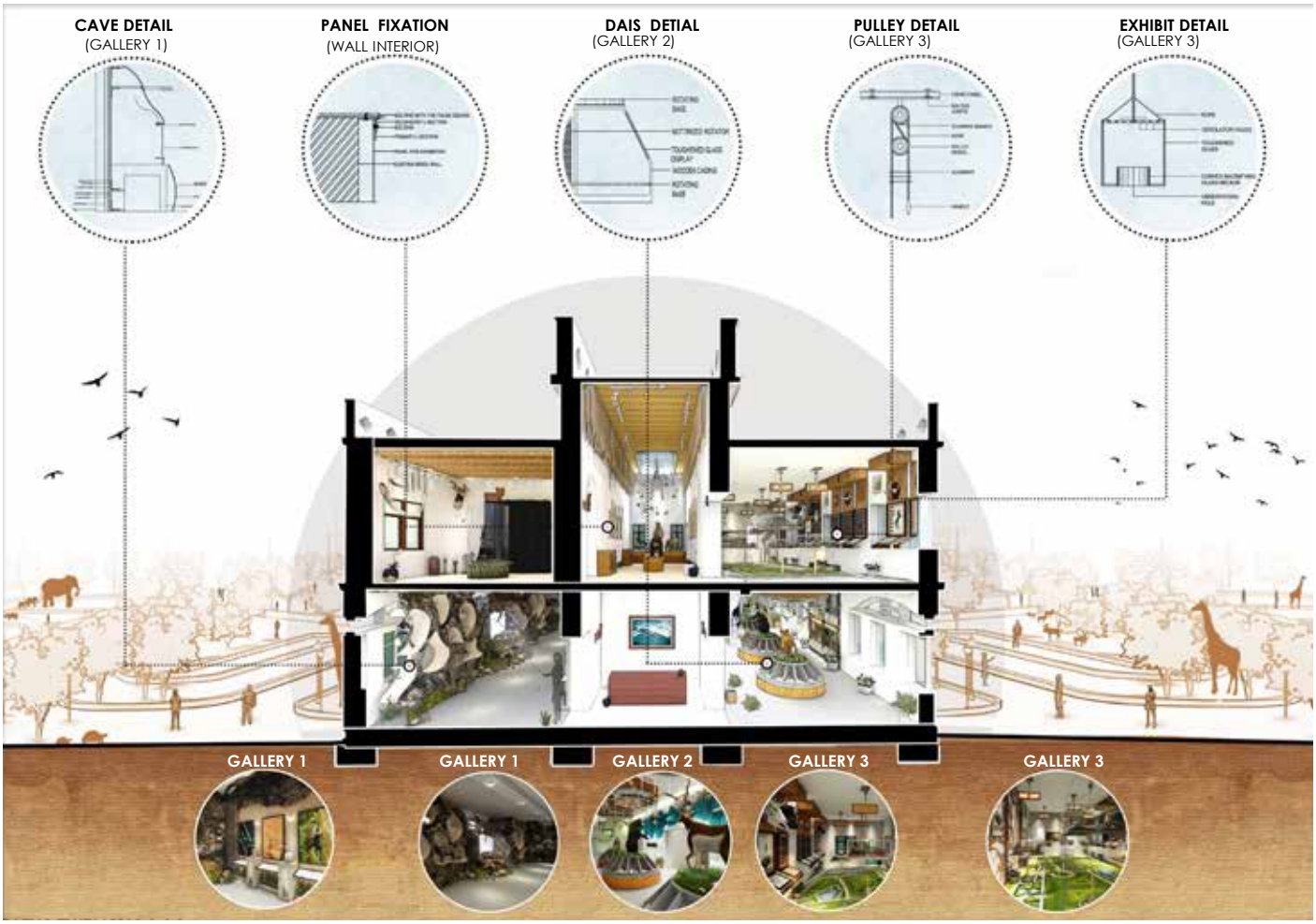
The Historical Archive preserves the conserved remains of the deceased animals. The visitors can observe and study the anatomy and life history of the animals.



In the A.V room visitors of all age group can experience activities vividly through innovative technologies, interactive holograms, 2D and 3D displays, advanced touch and motion sensors, VR consoles, etc. .

HERITAGE ROOM

The Heritage room displays the King's legacy and the evolution journey of the heritage building. It also explains the process of expansion of the area, it's animal count and development till the establishment of the interpretation centre.



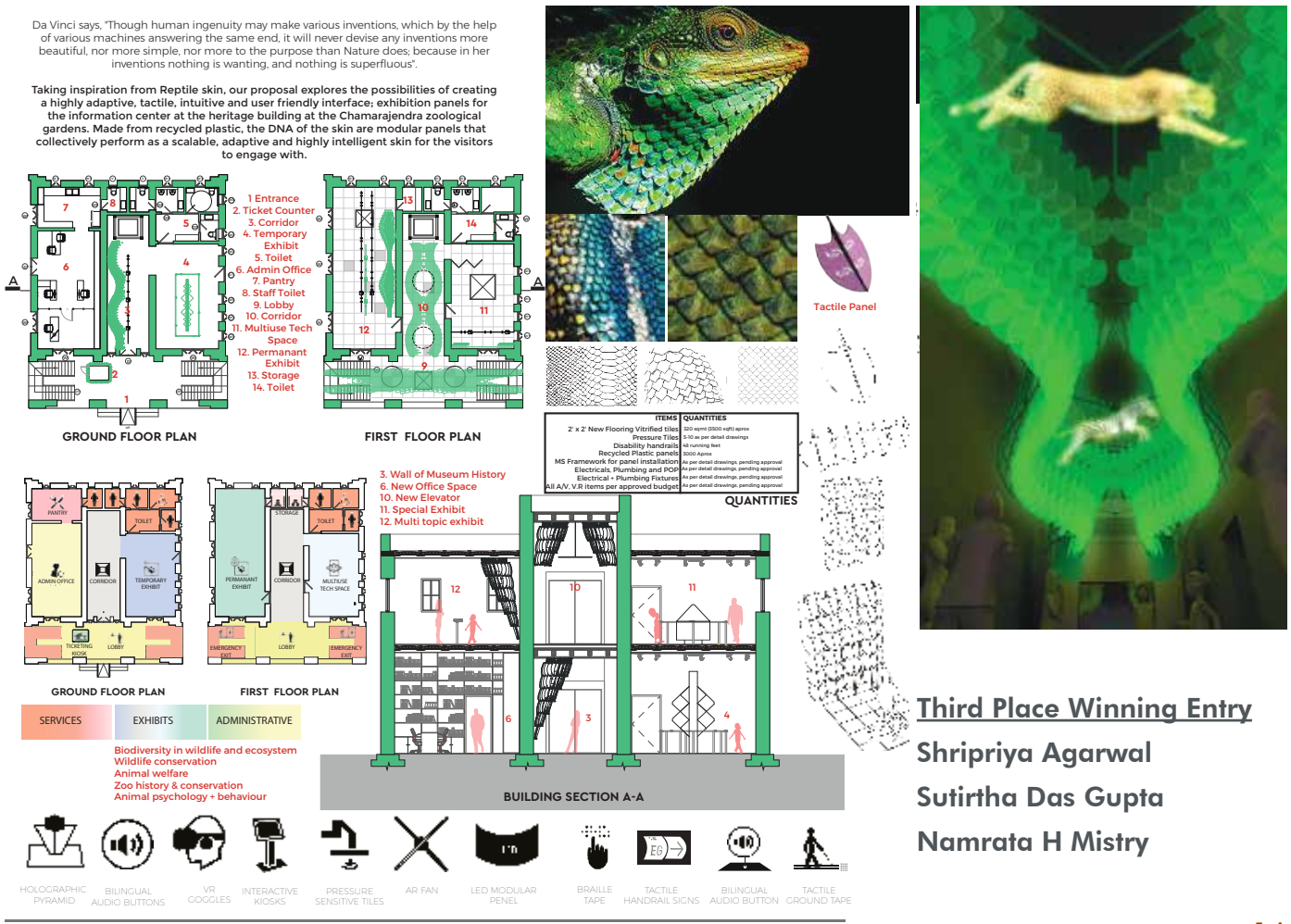
Zootopia 2021

First Place Winning Entry

Aman Bansal | Durgesh Nandini | Pratheek Routray
Ankita Jaiswal | Jagdish Samal

Second Place Winning Entry

Kshitija Prasad Y| K K Divyashri | Akansha Gautham | Kritika Lakhe | Shajahan A K



Third Place Winning Entry

Shripriya Agarwal

Sutirtha Das Gupta

Namrata H Mistry

TALKING HEADS

Dr. Abhijit Motiram Pawde,

Principal Scientist & Incharge,
Centre for Wildlife,
ICAR-Indian Veterinary Research Institute

Text and Photos: CWL, IVRI

All views expressed are personal

The Indian Veterinary Research Institute (IVRI) established in 1889 at Bareilly Uttar Pradesh in the year 1889 has been providing yeoman's service to the nation in the field of veterinary medicine and allied branches. We interview Dr Pawde, Principal Scientist to gain insights into the functioning of CWL) at IVRI and the passion that drives him and the team to take up the job.

ICAR - Indian Veterinary Research Institute
भा.कृ.अनु.प.- भारतीय पशु-चिकित्सा अनुसंधान संस्थान
(An ISO - 9001:2015 Certified Institute)

Q. Please tell us more about IVRI and CWL. ?

IVRI is a premier veterinary research institute that caters to the needs of animals with regards to nutrition, parasitology, diagnostic procedures and vaccine development. The Centre for Wildlife (CWL) at IVRI was established in 1984 and since then it has been involved in wildlife conservation activities across the country, guided by stalwarts in the field. The centre helps in situ conservation with disease surveillance in Protected Areas and imparting training to various stakeholders. The centre also extends help to the zoos with schedules for vaccination and feeding of animals, disease diagnosis and treatment using molecular tools. The centre has also worked on DNA based species identification for forensic purposes and has a repository of DNA for more than 25 wild animal species.

Q. When did you first decide to become a vet, and how did you become interested in wildlife interventions?

When I was 5 years old, I had a female German Shepherd (Dog) who was struggling to give birth. It was a dark and rainy night and no veterinary support was available. She, unfortunately, did not survive this and the incident left a lasting impression on me. It is this innate love for animals that helped me decide to become a veterinarian.

In June 1992 a male Rhino was shifted from Kanpur zoo to Dudhwa National park for augmenting the genetic pool of animals there. This, Rhino was zoo born but got injured during the courtship period by another male Rhino and we had to treat him using a makeshift wooden pole trevis with stay sutures using almost a dozen needles, deep inside the forest. Incidents like this have inspired me to understand and hone my skills for intervention.

Q. What does a wildlife vet do? Can you give us a glimpse into your daily routine balancing research and clinical work?

A wildlife vet wears many hats, he/she is not only a treating doctor but also has to be a people's person. In in-situ situations, one needs to be a team player training and leading wildlife rescue and emergencies. At the same time, one needs to be sensitive to the losses encountered by forest fringe dwellers during human-animal conflict. A veterinarian is a bridge between several disciplines and the skill does not start and end with immobilising animals during a rescue. Veterinarians are known to often go beyond the call of duty and get the job done! As an ex-situ professional, a vet has to be an administrator, communicating with the keeper, curator, suppliers of food/feed/fodder and understand any deviation from the normal health in animals including animal behavioural change. Duties may extend to checking whether drainage pipes are netted so that the rodents do not enter inside enclosures, the quality beef supplied. In pandemics, like bird flu, the veterinarian is responsible to advise and then often supervise all biosafety /biosecurity measures.

Q. Do you have a case that stands out as being especially rewarding? Or is there an incident that has stayed etched in memory?

The shifting and treatment of the Greater One-horned Rhinoceros from deep forest within Dudhwa National Park to the guest house for treatment along with Late Dr Dass of Nawab Wajid Ali Shah Zoological Garden Lucknow and the forest department is forever etched in my memory. The other incident is of the abdominal surgery performed at Udaipur Biological Park in December 2015 on the male tiger T-24 (popularly known as Ustaad). Performing a laparotomy procedure is routine for many surgeons, but operating on this beautiful fully grown male tiger, in the midst of continued media attention was a very challenging experience.

Bat Post Mortem

World Environment Day Celebration

Q. What place does research in sciences like biotechnology, forensics, etc play a role in wildlife veterinary medicine today, considering emerging diseases and trade?

The field of veterinary science is progressing by leaps and bounds. The hardcore diagnostic tools of basic patho-microbiology or physical examination, are today considered time-consuming and are practised less. The use of biotechnology like PCR, which is rapid and confirmatory helps solve the differential diagnosis puzzle. Similarly, in suspected cases of wildlife crime, the suspect often claims that the seized products or derivatives are artificial then the DNA be amplified and sequenced in the laboratory to provide scientific evidence. Similarly, seized wild animal meat can be linked to the species hunted by molecular tools. Biotechnology is also helpful in developing newer immunoglobulins and monoclonal antibodies.

Q. Please share your thoughts on zoonosis and how can zoos, ex-situ contribute towards prevention and mitigation.

Diseases like Rabies/FMD/Leptospirosis are very common around the vicinity of villages where feral domestic animals come in contact with wild animals. Zoonotic transmission and amplification of diseases are known to occur in such a manner. Supporting disease surveillance in forest fringe areas is the need of the hour. Similarly, in zoos, the captive wild animals are regularly vaccinated and observed using standard husbandry practises. There is a plethora of bio-physiological information that can be obtained especially through non-invasive (such as routine faecal sample testing) techniques to create a database on species-specific epidemiological needs thereby contributing towards the science of combating zoonosis.

Q. In your opinion why are Felid species getting infected with Covid in zoos?

Felids (both domestic and wild) are in general susceptible to infection especially to non-fatal enteric forms of corona infection. The recent Covid-19 pandemic has taught us several lessons on how to combat such new emerging diseases. Felid species housed in zoos may come in contact with humans such as keeper/caretakers and visitors who may be harbouring the coronavirus. The screening and testing for Covid-19 in animal keepers and the regulation of visitors have certainly helped prevent any major mishap. Vaccination of all zoo staff has also been a great support to prevent the spread of infections.

Q. Why do you think it's important to continue conservation initiatives in zoos to save wildlife?

A zoo has a controlled environment where we could have an all-around perspective of the animals in our care and the role they serve in maintaining a healthy ecosystem. My own passion for continuing in this field was driven by my proximity to both domestic and wild animals. In my opinion, children are highly sensitized towards conservation when they see and observe an animal face to face as in a zoo. Conservation education initiatives at zoos open up a whole new dimension of learning for the upcoming generation.

Q. What advice would you give to young professionals who might be interested in pursuing a career in zoological medicine?

Seeing and doing is learning, one has to pursue his/her own interest and interact with many experienced zoo vets and keepers to get knowledge. Nowadays, it is considered a specialized field. The basic knowledge of anatomy, physiology, pharmacology, nutrition etc should be exclusive for wildlife. However, a zoo vet has to put in 3-4 years as an apprentice/trainee under some experienced zoo vet. Unless one has the dedication and true interest to learn all about zoo animals one cannot become perfect especially if the approach is casual and half-hearted.

Sample Collection

Q. What are the challenges faced by a zoo vet and what policy level changes would be required to overcome those?

Zoo vet learns by experience, unfortunately, the current B.V.Sc syllabus or curriculum has limited exposure on zoo vet medicine and management that may include a few days of practical experience internship at the zoo. This can be reformed to provide a dedicated subject and field experience for wild animals including exotic species at the college level. Similarly a zoo vet has to treat diverse taxa of animals and their varied symptoms and look after the biosecurity measures. Ideally, zoo vets with specialization in dealing with various taxa should be hired or on call to support a set of zoos within a state. Issues of frequent transfers, non filling up of govt vacancies and in-built capacity building and strengthening at periodic intervals are also some of the challenges that can be resolved with a systematic review and filling in of the gaps.

Training Sessions

PNV walking path

Hippo, Rhino, Nyala at PNV

Zoo in focus INTERNATIONAL

PARCO NATURA VIVA – GARDA ZOOLOGICAL PARK, ITALY.

Text & Photos
Camillo Sandri
Veterinary Food Inspection Specialist
General Curator
Parco Natura Viva – Garda Zoological Park

Bearded Vulture Stelvio50 in the wild

The mission of PARCO NATURA VIVA – GARDA ZOOLOGICAL PARK, ITALY is to contribute to the conservation of wildlife and its natural environment by defining strategies to ensure the survival of endangered species. These strategies are important to protect and manage species threatened with extinction under controlled conditions by optimizing animal management. To reach this goal, it is important to focus on issues such as population biology, animal welfare, behavioural ecology, development of cognitive skills and veterinary medicine. At the same time, it is also necessary to increase awareness of the importance of various forms of life on our planet, raising collective consciousness about the need to safeguard the natural world, educating younger generations to respect the environment.

Parco Natura Viva - Garda Zoological Park (PNV) is a modern zoological garden located just a few kilometres from Verona (Italy) and Garda Lake. It has been open to the public since 1969. PNV covers about 42 hectares of land and is home for 1,200 specimens belonging to 200 species of animals. Parco Natura Viva also has 18 hectares of land for farming, devoted to the production of grass, hay and branches for the animals. Parco Natura Viva consists of two different main areas: the Safari Park (about 3,5 km) in which visitors can see African animals through the windows of their cars, and the Fauna Park (about 7 km) in which visitors follow a one-way path by walking through five different continents of the World (Africa, Oceania, America, Europe, and Asia) can observe species in their specific region.

The Park has Departments that work closely together to achieve its goals: first of all, the Health Care and Animal Management Department, but also the Research and Conservation Department, the Education Department, and the Marketing and Communication Departments.

As European and International modern zoo, Parco Natura Viva-Garda Zoological Park is much more than a place to go and see the animals. European modern zoos are dedicated to conservation of native and exotic species to ensure their survival in the wild and to guarantee the good health and welfare of animals under human care.

PNV is involved in breeding programs, conservation and reintroduction projects, but also research and education projects. The Park belongs to national (UIZA), European (EAZA) and World (WAZA) associations of zoos and aquaria and follows the population management rules of the EEP (EAZA Ex-situ Programmes) for the sustainability of both in-situ and ex situ populations. These rules are necessary to promote the genetic diversity of animals under human care, which is necessary for the successful reintroduction of endangered species into the wild. To have a successful reintroduction program, people should have to understand that wildlife is a public heritage, the protection of which remains a priority. PNV has therefore developed a strategy to harmonize the needs of its audience with the needs of the animal species.

PNV is focusing on five activities:
i. improving education activities for visitors;
ii. preserving animal species and their habitat through the development of national and international collaborations;
iii. increasing the knowledge of ethology, ecology, biology, cognition and communication, veterinary medicine and reproduction;
iv. reducing the human impact on the environment;
v. developing training programs for all professionals working with animals.

Education programs have been developed for schools' children and visitors, whereas the collaboration with universities allowed the development of high-level education programs. The goal of these educational opportunities is to promote the coexistence between humans and wildlife.

Bearded Vulture at Parco Natura Viva

Tigers at Parco Natura Viva

Chimpaanzees at Seychelles

Bison Reintroduction Project

Before the Covid-19 pandemic, the Park had 120 employees in total (including biologists, veterinarians and naturalists) and several permanent suppliers, dedicated to the management of the park and its animals, ensuring care, health and welfare of all hosted species and individuals.

Each year PNV is visited by around 40,000 school students, as well as almost half a million individual visitors.

Currently, PNV participates in about 70 EEP projects and hosts the EEP coordinator of the Ring-tailed lemur and the park is involved in more than 25 conservation projects around the world (Madagascar, Seychelles, Mongolia, Europe, Vietnam, Nepal and others) thanks to collaboration and agreements with national and international institutions.

Parco Natura Viva has signed more than 20 agreements with Italian universities and more than 15 internships for students are activated every year, in the context of more than 10 research projects. Parco Natura Viva has one of the most active research programmes in the Italian zoo community. In October 2008, Parco Natura Viva organized the 1st National Conference on Zoo-based Research, which quickly became an important Italian annual meeting. The PNV Research and Conservation Department conducts research to improve animal management and wildlife conservation as well as to increase the knowledge about animal biology and welfare. Research in Parco Natura Viva focuses primarily on animal behaviour, cognition, sociality, environmental enrichment and training. Nowadays zoological gardens are places where people can not only see animals from all over the world, but also learn and live a true educational experience. Zoos have become centres for environmental education.

The Education Department of Parco Natura Viva is a centre for environmental education on a national level, aiming to offer educational programs to schools, to promote environmental knowledge and to make students aware of issues related to conservation of nature. Parco Natura Viva is a member of the IZE (International Association of Zoo Educators), an association that organizes yearly conferences and meetings.

Cesare Avesani Zaborra and beraded vulture release

As part of an international network, Parco Natura Viva is involved in projects for the conservation of the species. An example is the Seychelles project built on the collaboration between Parco Natura Viva, University of Bologna, Ministry of Agriculture, Environment and Climate Change of the Seychelles, Seychelles National Parks Authority, and an International NGO for teenagers, Green Teen Team.

The Bearded vulture conservation project that involves many zoos and institutions, is also part of funded projects from European Commission, the so called Life projects. Bearded vultures of Parco Natura Viva are part of the project and the chicks born at Parco Natura Viva have been reintroduced into the wild. PNV can tell the same story for the European bison project for which European bison calves born at PNV have been released into the wild. For the successful ongoing of these projects the involvement of both the local and zoo community is essential. Storytelling is a strong tool to disseminate awareness on conservation efforts and nurturing the social community.

Bearded Vulture Stelvio50 in the wild

Zoo users are becoming increasingly digital and the social readers' community far exceeds physical visitors in number. The covid-19 pandemic has increased the number of virtual visitors. Telling stories in episodes may affiliate users, build the community, gratify the individual, and help the zoo to spread news about the great work in Conservation. Parco Natura Viva has chosen smart communication and media, going from websites to newsletters and social networks, to communicate with the visitors and visitors who think of themselves as part of the project.

Lion enclosure at Nawab Wajid Ali Shah Zoological Gardens

NAWAB WAJID ALI SHAH ZOOLOGICAL GARDENS, LUCKNOW.

Text & Photos
R K Singh IFS,
Director,
Nawab Wajid Ali Shah Zoological Gardens.

The zoo is steeped in history of cultural and ecological significance. Established in the year 1921 to commemorate the arrival of the Prince of Wales to Lucknow, the zoo was conceptualised by Sir Harcourt Butler, the Governor of the United Province in pre-independent India.

First named as the 'Prince of Wales Zoological Gardens Trust' it was renamed as 'Lucknow Zoo' in 2002 and subsequently rechristened as 'Nawab Wajid Ali Shah Prani Udyan' in 2015. The zoo is also colloquially known as 'Banarsi Bagh' as in the 18th century Nawab Nasiruddin Haider, Nawab of Awadh established this area as a mango orchard and the mango saplings were brought from Varanasi.

The zoo is famous for 'Baradari', a square building or pavilion with twelve doors designed to allow free flow of air built by the Nawab as a place for leisure. The heritage monument has been immortalised in the legend and epic mainstream movie 'Umrao Jaan' that was shot here in 1981.

With the expansion of the city, it is situated in the heart of Lucknow city with an area of over 29 hectares and harbours more than 1000 animals of about 100 species. The star attraction of the zoo includes 7 felid (cat) species, The Himalayan Black Bear & the Sloth Bear, 10 species of reptiles, about 50 species of birds, 5 species of deer and Hippopotamus and Chimpanzees as part of its exotic animal section.

With over 11-12 lakhs annual visitors, it is noteworthy that during pre-covid times, the zoo was the second most visited place in Uttar Pradesh after the Taj Mahal!

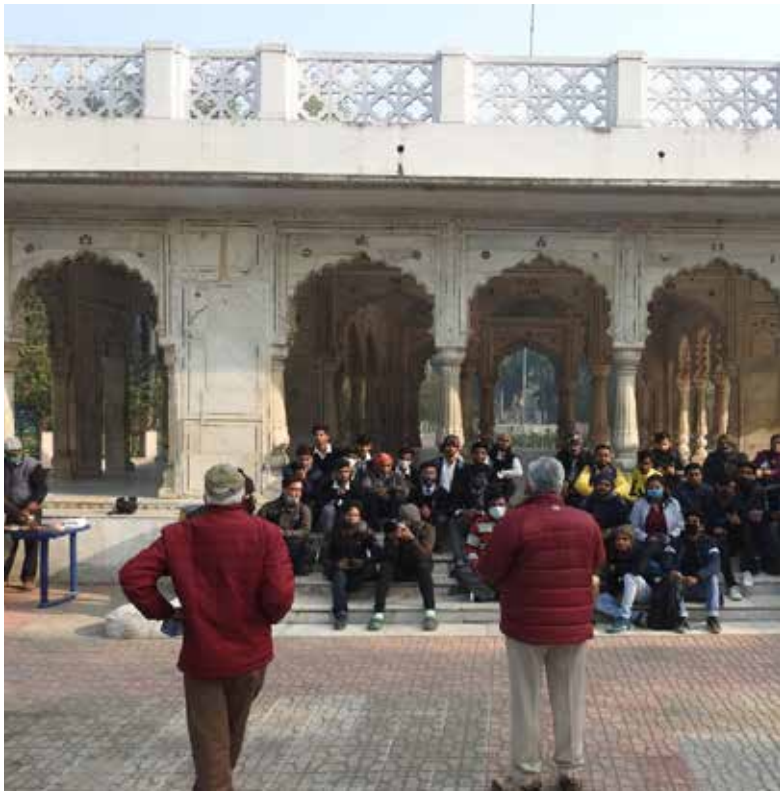
This zoo is also a valuable repository of indegenous trees, some of which are more than 100 years old. Two very old Parijat trees (*Adansonia digitata*) having a girth of about 35 feet and estimated to be over a 100 years old are a star attraction in the zoo campus.

Entrance at Nawab Wajid Ali Shah Zoological Gardens

"Baradari" a heritage structure within the zoo premises

The zoo has kept up with modern times and several new eco-friendly measures have been adopted viz: adopting battery-operated vehicles, ensuring plastic-free zones and a garbage-free environment, initiating solid waste management and production of compost. The natural environment of the zoo has significantly improved and this has provided an opportunity to sensitize zoo visitors towards a more holistic approach towards sustainable living and a lower carbon footprint.

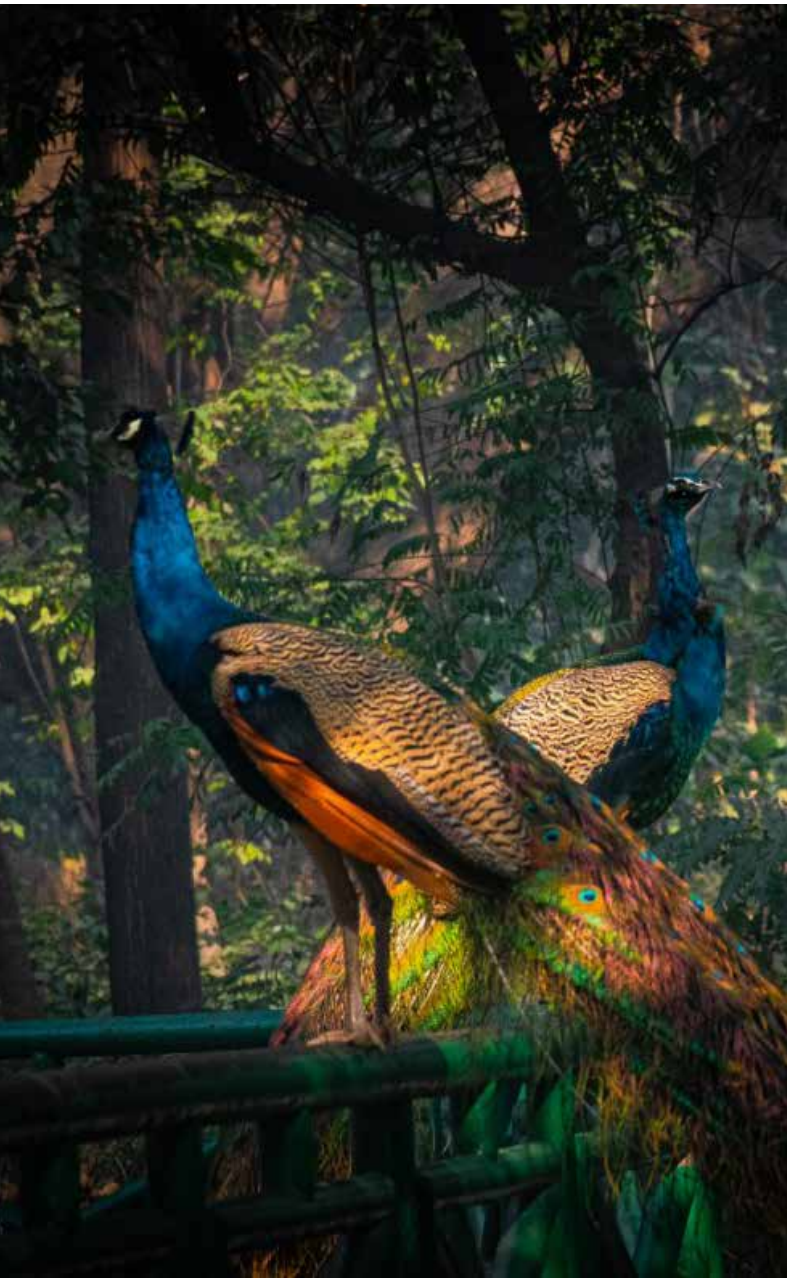
The zoo also has several firsts - one being the unique Butterfly Park located in an area of two acres of swamp land that has recorded more than 28 native species of butterflies. The zoo also gives the highest degree of importance to education, awareness, and outreach targeted at children and youth. It has an advanced 'Nature Interpretation Center' where information related to Forest and wildlife of Uttar Pradesh is provided through interactive display boards. The Nature Interpretation Center is also unique to house a gallery of signage in braille thereby enabling the visually impaired visitors especially children to make a greater connection with the zoo.



Nature Interpretation Centre

The zoo also runs an animal adoption program and welcomes individuals, corporates, NGOs etc to become part of the zoo family. Boards are displayed at the enclosures showcasing the adoption program participants. There is also a provision of giving the visitor a special admit card on demand for viewing their adopted wildlife.

With new and improved visitor facilities, professional management of visitor services, the satisfaction level of the visitors to the zoo has increased. It is hoped that the historic zoo continues to reinvent and make itself valuable and worthwhile for city dwellers, reminding them of the nature connect and conservation.



Zoo elephant leading in clearance of debris after the Super-cyclone in 1999.

First captive breeding of Gharial reported in India in 1980.

From the pages of history

NANDANKANAN BIOLOGICAL PARK, BHUBANESWAR, ODISHA.

Text & Photos
Nandankanan Biological Park

Nandankanan Biological Park, Bhubaneswar, Odisha was established on 29th December, 1960. It has a humble beginning with 11 Spotted Deer, 6 Indian Muntjac and 2 Blackbuck housed in an 800 sq.ft enclosure. Sri S.K. Patil, the then Minister of Food and Agriculture, Government of India inaugurated the new Biological Park named "Nandankanan" which means the heavenly Garden of Gods.

State Botanical Garden was established in 1963 adjoining to the park on the other side of Kanjia lake by Agriculture Department, later transferred to Nandankanan in 2006 for its management. Kanjia lake (66 ha) was listed as Wetland of National Importance by the MoEFCC, Government of India in 2006. The Nandankanan Zoological Park together with the Kanjia lake and State Botanical Garden over an area of 4.37 sq.km. was notified as Nandankanan Wildlife Sanctuary on 3rd August 1979.

Nandankanan is pioneer in breeding many endangered species viz. Gharial (1980), Indian Pangolin (1971), Ratel (2012) to name a few. It has the distinction in captive breeding of all three Indian crocodilians. The zoo is the coordinating zoo for conservation breeding of Indian Pangolin and participating zoo for Indian Chevrotain, Bengal Tiger and Long-billed Vulture. More than 860 Gharials have been released in the Mahanadi river system to repopulate the nature since the 1986 and from 2019 onwards released gharials are being monitored for their movement and survival through biotelemetry.

Bear enclosure enrichment

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