



# National Conference FOR ZOO DIRECTORS

Bhubaneswar  
September 10 & 11, 2022

## Report







# National Conference for **ZOO DIRECTORS**

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## **Background**

The antecedents of the modern zoo have roots in the 19th century. They were the forerunners for the zoological institutions today, open to the public and grounded in science. The modern zoo is a testament to centuries of development in the fields of zoology and animal behaviour. Zoos that were originally symbols of a monarch's power are now institutions devoted to scientific research and the conservation of species whose natural habitats are in peril. Zoo environments have made great strides in animal welfare and the conservation of endangered species. They have expanded their display repertoire beyond the conventional megafauna to include lesser-known taxa- reptiles, amphibians, fish and insects. Living collections are presented in taxonomic order, with various species of the same family grouped together, for comparative and holistic interpretation and understanding of species, and habitats.

The modern zoo is a complex operation, with specialists in various disciplines including animal husbandry, health, nutrition, behaviour, and records keeping. Zoos, in the new narrative, fulfil a number of roles, from education to species ambassador programs. Wildlife conservation dominates a large part of a zoos' daily operation.

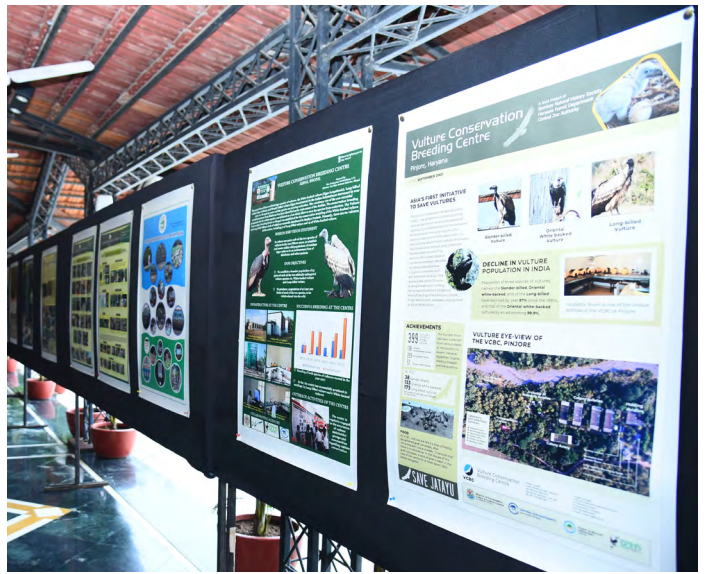
While conservation assumes a high priority, it is yet a small perceptible part of the initiatives that zoos undertake. They also ensure that every visitor has learned something about the animals, and their habitat and has acquired a better consciousness about their relationship with wildlife. Through messaging and awareness and motivating a new generation of conservationists, the education endeavours of modern zoos hope to make a positive impact on wildlife worldwide.

There is another priority that goes unnoticed by the masses: Research. Research carried out in zoos on the behaviour of wildlife, and medical conditions of animals can have tremendous implications for humans. Zoos conduct research which links ex situ and in situ components ranging from species behaviour to dispersal and survivability after release in the wild. Interventions in wildlife health and surveillance including collaborations for One Health research are taken up by zoos.

Modern zoos have evolved tremendously from their rather primitive origins, where their goals were less defined, and the focus was on acquiring as many animals as possible. Species preservation and conservation have become the main objectives of zoos, and they have programs to protect the animals both in their collections and in the wild. Education, another priority of modern zoos, can inspire a new generation of conservationists dedicated to saving wildlife across the globe.

Bringing the zoo directors, multi-sectoral experts and wildlife professionals together on a single platform for discussions on challenges faced in the management of zoos and sharing of ideas and developing collaborations is a step towards building an informed and empowered community; working towards the unified goal of implementation of best practices in ex situ conservation.







## Inaugural

The National Conference for Zoo Directors was held on September 10-11, 2022 organised by the Central Zoo Authority and hosted by Nandankanan Biological Park, Bhubaneswar. The conference was presided over by Shri Bhupender Yadav, Hon'ble Minister for Environment, Forest and Climate Change, Government of India. The conference was organised with the objective of capacity enhancement and focused on the conceptualisation and development of conservation breeding programs for endangered species, research initiatives, use of innovation and technology in scientific management of zoos, species acquisition plans and building collaborations.

The conference was inaugurated by Shri Bhupender Yadav, Hon'ble Minister for Environment, Forest & Climate Change, Govt. of India. Shri Ashwini Kumar Choubey, Hon'ble Minister of State for Environment, Forest & Climate Change, Government of India, Shri Pradeep Kumar Amat, Hon'ble Minister Forest, Environment and Climate Change Department, Government of Odisha, Ms Aparajita Sarangi, Hon'ble Member of Parliament, Bhubaneswar Constituency, Shri Satyabrata Sahu, Additional Chief Secretary, Forest, Environment and Climate Change Department, Government of Odisha, Shri Debidutta Biswal, Principal Chief Conservator of Forest & Head of Forest Force, Government of Odisha and Shri Sushil Kumar Popli, Principal Chief Conservator of Forest & Chief Wildlife Warden, Government of Odisha were also present. Dr Sanjay Kumar Shukla, Member Secretary, Central Zoo Authority and Ms Akanksha Mahajan, Deputy Inspector General Forest (Hq), CZA, and Dr Manoj Nair, Director, Nandankanan Biological Park, Odisha welcomed the dignitaries.

As part of the conference, a poster presentation session was arranged, which provided the zoo director's an opportunity to present achievements in conservation breeding, education and awareness and community outreach initiatives from their respective zoos. Hon'ble Minister for Environment, Forest & Climate Change, Govt. of India and dignitaries interacted with the zoo directors during the poster session.

During the inaugural, MEE-Zoo 2022, Azadi ka Amrit Mahotsav - A compendium (Vol II), Field Guide for Rehabilitation of Indian Pangolin (2nd Edition) and a video compilation of activities undertaken during the Azadi Ka Amrit Mahotsav were released by Hon'ble Minister for Environment, Forest & Climate Change, Govt. of India and the dignitaries on the dais.



Shri Bhupender Yadav, the Hon'ble Minister of Environment, Forest and Climate Change during the inaugural keynote address at the National Conference for Zoo Directors held at Bhubaneswar on September 10, 2022, made the following remarks:

1. The Hon'ble Minister appreciated the efforts of the Central Zoo Authority for undertaking the pioneering Management Effectiveness Evaluation of Zoos across recognised zoos in the country. He emphasised the need for periodic evaluation of zoos to ensure that they continue to contribute and complement the national goals of wildlife conservation and awareness.
2. The Hon'ble Minister mentioned the ongoing efforts for nominating eminent personalities as zoo ambassadors to further the cause and promote wildlife conservation in India.
3. The Hon'ble Minister remarked that the sessions during the National Conference for Zoo Directors and similar workshops should result in practical solutions for zoos to address routine management.
4. The Hon'ble Minister commended the efforts of zoos in animal upkeep and welfare during the Covid-19 Pandemic. And further stated that this resilience should serve as a yardstick in their operations throughout.

And recommended the following:

1. The Hon'ble Minister recommended exploring the possibility of undertaking MEE in zoos every two years to assess strengths and weaknesses among zoos.
2. Referring to the Management Effectiveness Evaluation 2022 report, the Hon'ble Minister inquired about the reason for securing low scores from the officials of the State Museum and Zoo, Thrissur. He further directed to constitute a committee to evaluate low-scoring zoos such as Sri Sayajibaug Zoo, Vadodara and State Museum and Zoo, Thrissur and ascertain the reasons for the same. Further, he recommended that best practices from the top-scoring zoos and improvements required in the low-scoring zoos may be compiled so that the performance index can be optimised between all recognised zoos.
3. The Hon'ble Minister emphasised the need for adopting sustainable practices in zoos while ensuring minimal environmental impact during the operations.
4. The Hon'ble Minister emphasised that zoos should continue their efforts towards creating 'people connect' by involving citizens especially children in their conservation outreach activities.
5. The Hon'ble Minister recommended that recognised zoos should strive to secure international accreditation from relevant agencies.
6. The Hon'ble Minister informed the audience about the planned reintroduction of Cheetah on September 17, 2022. He highlighted the commitment of the Central Government towards the conservation of threatened Indian species such as Asiatic Lion, Dolphin sp. He directed all the recognised zoos to display appropriate IEC materials in the zoos highlighting the conservation and reintroduction of Cheetah. In this context, he guided zoos to organise the screening of wildlife films in zoos.
7. The Hon'ble Minister while referring to the NIRANTAR initiative aimed at enabling information dissemination across institutions, emphasised that zoos should collaborate with organisations working in a similar sector while ensuring improved communication between zoos. He further







emphasised that institution-building should be complementary to policy decisions of the government.

8. The Hon'ble Minister emphasised the role of zoos in recreation and awareness while being easily accessible to the public. He concluded by saying that 'zoos should be developed to be a part of the culture like museums.

Shri Ashwini Kumar Choubey, Hon'ble Minister of State for Environment, Forest & Climate Change, Govt. of India applauded the positive step taken to bring together the Indian zoo community with the gathering of more than 70 zoo directors from across the country with similar conservation goals and a unified objective of knowledge exchange. He drew attention to zoo-based programs like "adopt-an-animal" that would bring a greater people-connect with wildlife and inspire a culture of conservation. He also emphasised taking up awareness programs such as skits or plays in local languages with children.

## **September 10, 2022- DAY 1**

### **Session I- Ten Year Vision Plan for Indian Zoos and Strengthening CZA (2021-2031)- Update and way forward**

The first talk of this technical session was by **Ms. Akanksha Mahajan**, Dy Inspector General Forest (Hq), Central Zoo Authority. The session provided an overview of the vision plan and outlined the pillars of change. In the session, details of the initiatives and actions to be taken up to achieve the targets outlined in the vision plan were elaborated with reference to the following:

1. Vision Plan 2021- 2031 is a strategy of transformation for Indian zoos that lays out a roadmap for change. The plan is devised to help zoos think outside the box and implement changes and strategies to become a greater force for conservation.
2. The vision plan aims to help zoos by providing a road map to implement best practices in animal care, conduct cutting-edge research with meaningful collaborations and expert inputs, create a holistic, immersive visitor experience and strike a meaningful chord with people of all ages.
3. Together with partner institutes, able and empowered teams, the plan envisions Indian zoos taking meaningful conservation action and affirming a deeper community connection.
4. The aim of the first session was to stimulate a discussion and understand action points regarding the goals and strategies for Indian zoos to embrace the function of modern zoos: recreation, education with conservation.

This was followed by experience sharing by two zoos and detailed actions undertaken by them in accordance with the vision plan document and the expected way forward.





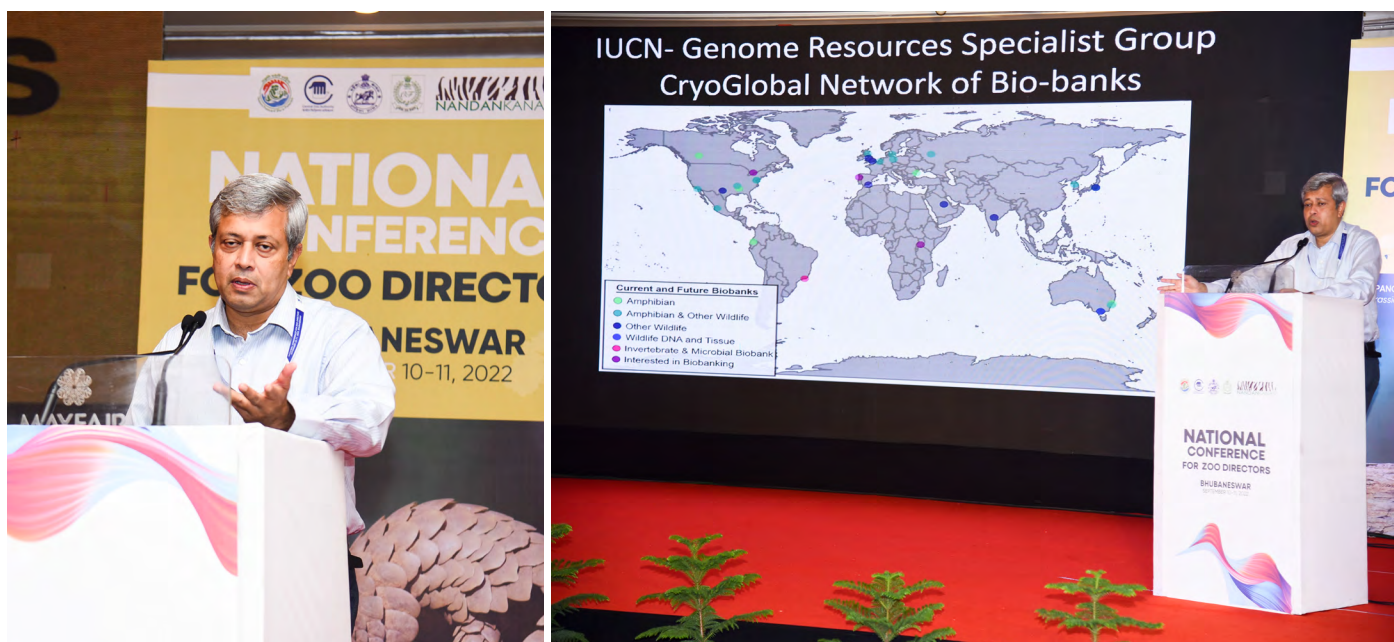


The first presentation was by **Shri Srinivasa Reddy**, Director of Arignar Anna Zoological Park, Vandalur, Chennai outlining the development of the Advanced Institute for Wildlife Conservation which is managed with them by the Tamil Nādu Forest Department and is involved in various research activities related to wildlife health and management. The highlights of the talk were:

1. Live streaming of animal enclosures and activities at the zoo.
2. The Zoo Ambassador and the Species Ambassador programs, zoo clubs and theme-based programs have been immensely popular in the zoo to create outreach and continue to engage the community with the zoo and its activities.
3. The active involvement with the veterinary universities and colleges and with students who often volunteer and attend specialised programs.
4. The CSR involvement for signage, newer development ventures and collaboration with the Tamil Nadu Wetland Mission for the conservation of Otteri Lake.
5. Attempts to bring in VR features for the interpretation centre. The presentation emphasised the need to choose the right CSR partner and defined and outlined work plans for the year.

The second presentation was by **Ms Kalpana**, Mahendra Chaudhary Zoological Park, Chhatbir, Punjab highlighted the work taken up which aligned to the vision plan targets. The highlights of the talk were:

1. The SOP for operations and focus strongly on visitor feedback that is reviewed regularly.
2. Updates were provided on the status of the conservation breeding program for the Tiger and for the ongoing captive breeding of Himalayan Goral, Black Partridge, Gharial, Red Jungle Fowl, Kalij Pheasant, Chukar Partridge, Peafowl and Golden Pheasant. An incubation facility has been set up for the artificial incubation of several species of birds. The zoo has been closely involved with the releases of the Gharial in the Beas-Sutlej River System, the survey and monitoring work for the project and also capacity enhancement for all round success of the project.
3. The zoo is now conducting field surveys to understand the status of the Shaheen Falcon in the wild so as to be able to put together a planned conservation breeding program for the species.
4. The enrichment activities and the modifications to accommodate seasonal changes, the upgradation of infrastructure, zoo hospital, development of zoo apps, a visitor- animal enclosure interface etc.
5. The assistance for mitigation of human-animal conflict situations, animal rescue and the emphasis on the release of the rescued animals back to the wild.
6. The zoo has positively utilised the virtual platform for continuing engagement with the community, students etc through ongoing virtual programs.
7. An interpretation centre with children-friendly interactive displays that encourage learning by "seeing and doing".
8. Sustainability and green energy initiatives.
9. A unique PPP venture for a dinosaur park has proven profitable for the zoo and the zoo is keen to explore possibilities of engagement with CSR initiatives.



### Session takeaways

1. Zoo to consider developmental activities in terms of infrastructural upgradation, incorporating environmental sustainability measures.
2. Zoos should consider becoming more financially independent with the formation of societies and implementation of programs with CSR funding.
3. Zoos may consider exploring schemes announced by the Central Government to garner support for programs and conservation initiatives.
4. Zoos to take up outreach initiatives towards building a deeper and long-standing connection with the community at large.

### **September 11, 2022- DAY 2**

The technical sessions on the second day were related to advances in interventions for ex-situ management of conservation priority species, linking in-situ and ex-situ conservation, One-health: Priority areas and activities and Holistic planning of ex situ conservation in zoos. This included a session on planned conservation breeding programs of the Central Zoo Authority and Management Effectiveness Evaluation for Zoos to apprise the directors of the process, various aspects of zoo management and the criteria for scoring.

### Session II: Advances in interventions for ex-situ management of conservation priority species

Thousands of species all over the world face extinction, and many fragile ecosystems are facing growing threats. Concepts like one health that address worldwide health and conservation issues, emerging and re-emerging diseases and animal welfare standards are spoken about more frequently and in cross-sectoral discussions as well. Participants from diverse fields – human health, wildlife health, veterinarians, etc. – having diverse perspectives on capacity development, and interdisciplinary approaches towards holistic research is the need of the hour.

The first talk of this technical session was by **Dr Karthikeyan Vasudevan**, Chief Scientist, Laboratory for the Conservation of Endangered Species (LaCONES) Centre for Cellular and Molecular Biology.

The talk was an assemblage of the work conducted at LaCONES over the past decade and how their engagement with the zoo community can be enhanced.

The highlights of the talk were:

1. The research projects viz: Genomic sequencing of Asiatic Lion (*Panthera leo leo*), sequence analysis of confiscated Indian Star Tortoise (*Geochelone elegans*) for identification of populations, non-invasive methods of monitoring wildlife populations (stress hormones, reproductive hormones), development of environmental DNA tools for surveillance.
2. The role of research facilities (like LaCONES) in planned conservation breeding programs and the use of molecular technology tools especially in the identification of individuals (possible founders and genetic diversity and relatedness of individuals), research in wildlife diseases diagnosis using multiplex PCR.
3. The advances related to biobanking and cryopreservation for species preservation and assisted reproduction techniques.

This was followed by experience sharing by three zoos and detailed actions undertaken by them for the implementation of interventions (genetic profiling, hormone estimation studies for determining reproductive health etc) for species managed in conservation breeding programs. The talks also highlighted the development of collaborations for research initiatives to advance the conservation of endangered species housed in the zoo.

The first presentation was by **Shri Ajit Kulkarni**, Executive Director, Sri Chamarajendra Zoological Gardens, Karnataka.

The highlights of the talk were:

1. The current species and activities for species included in the planned conservation breeding program, Gaur and Lion-tailed Macaque.
2. The proposed additional species of interest like Indian Grey Wolf, Dhole, Nilgiri Langur, Indian Giant Squirrel, and Grey Jungle Fowl. He outlined the plan for conservation breeding, capacity enhancement and expert consultations.
3. The challenges faced in the identification of release sites and proposed actions for stakeholder involvement in the future were elaborated.

The second presentation was by **Shri Basavaraj Holeyachi**, Director, Padmaja Naidu Himalayan Zoological Park, West Bengal.

The highlights of the talk were:

1. The conservation of endangered Himalayan Species- Herbivores, pheasants, Red Panda Snow Leopard and Himalayan Newt. Additionally, Himalayan Goral, Mishmi Takin, Kalij Pheasant, Markhor, Red Junglefowl and Temminck's Tragopan that the zoo has included for captive





breeding.

2. The success in the conservation breeding and release of Himalayan Red Panda.
3. The concerns related to species conservation of Red Panda, international and national collaborations and the steps taken to ensure success and survivability till the release and monitoring of released individuals in the wild.

The third presentation was by **Shri Anil**, Veterinary Officer, Zoological Garden, Thiruvananthapuram.

The highlights of the talk were:

1. The history of the zoo since its establishment in 1857 and its current functioning under the State Museum and Zoo Department under the Ministry of Cultural Affairs.
2. The participating role of the zoo in the conservation breeding of the Lion-tail Macaque.
3. The work being carried out in the program along with the constraints proposed a collaborative way forward with the co-ordinating and other participating zoos for the species.

### **Session Takeaways**

The role zoos play in contributing to in situ conservation and eventually species recovery should be given additional emphasis. There are several species e.g., Red Panda, Snow Leopard, Lion-tailed Macaque, Gaur, Dhole, Blyth's Tragopan etc., which are being bred as part of ex-situ conservation programs and have a great potential to contribute to species conservation in situ.

1. Zoos also have great potential to serve as centres to take up novel conservation research and develop programs with broader scope related to in-situ conservation initiatives.
2. Zoos to further adopt the one-plan approach for conservation strategies that integrate in-situ and ex-situ management processes.
3. Incorporate programs and capacity building initiatives for wildlife health and disease management at zoo level and at regional level.

### **Session III – Wildlife Diseases and One Health**

The first talk of this technical session was by **Dr Sindura Ganapathi**, Visiting Fellow, O/o PSA, New Delhi.

The highlights of the talk were:

1. The OneHealth Mission including its activities, pandemic preparedness, Research and development, and implications on health, productivity and conservation.
2. The emerging and re-emerging diseases, crossovers, spill overs and epidemiological implications.
3. A global perspective was provided for a holistic view and leveraging the lessons learnt for management and preparedness.
4. Cross-sectoral collaborations between Animal Husbandry, Human Health and Wildlife Disease surveillance that are currently in place were highlighted.





The second talk of the technical session was by **Dr Anoop Velayudhan**, Scientist E (Medical), Indian Council of Medical Research.

The highlights of the talk were:

1. The role of potential zoonotic pathogens that can spread to humans through any contact point with domestic, agricultural, or wild animals and many of these diseases often catch health authorities unprepared.
2. The recent COVID-19 pandemic is the sixth global health emergency. In India, newly emerged or existing zoonotic diseases like Kyasanur Forest Disease, Scrub typhus and Crimean Congo Haemorrhagic fever are frequently expanding to non-endemic areas.
3. Zoos are places where there is constant and often close interaction between wildlife and their human caregivers.
4. The paucity of systematic study to examine zoonotic diseases, particularly among zoo personnel in India and the gaps in our understanding of the prevalence and types of infections needs to be collected.
5. In the wake of increasing emerging infectious diseases, spill over diseases he highlighted that it is prudent to set up a sentinel site surveillance system for one health diseases in select zoos of India to ascertain the incidence of one health priority diseases among zoo workers, veterinarians and animal handlers in zoos. This will strengthen diagnostic systems.

This was followed by experience sharing by three zoos and detailed actions undertaken by them.

The first presentation was by **Ms Watisungla Amer**, Nagaland Zoological Park, Dimapur.

The highlights of the talk were:

1. The work carried out for the fauna of the NE and local fauna in particular where 46 species with 356 animals are being housed.
2. The captive breeding of the Asian Brown Tortoise, a unique species that builds a mound nest and shows some degree of parental care for the establishment of an insurance population. The care and husbandry measures of the species were outlined.
3. The local release sites selected for the species and the survey done, soft release and monitoring systems and work carried out with local stakeholders.
4. The interventions with the Blyth's Tragopan, the State Bird of Nagaland at Kohima. The objective of this project is conservation breeding of the species, research on its behaviour, habitat, ecology, breeding biology and education awareness.

The second presentation was by **Dr. Utkarsh Shukla**, Deputy Director, Nawab Wajid Ali Shah Zoological Garden, Uttar Pradesh.

The highlights of the talk were:

1. The details of the current status and programs of the said zoos spread across an area of 29 hectares which is located in the heart of the city of Lucknow.
2. The ongoing conservation breeding of Swamp Deer and that there are around 100 individuals housed in the zoos.
3. The rescue operations of Leopards and Bengal Tigers from conflict situations in the region which is supported by the zoos.
4. The infrastructure for administration, animal care and well-developed visitor amenities.
5. The rich floral diversity of the zoo premises.
6. The braille gallery with 42 signages for the visually impaired.

#### **Session IV – Linking in situ and ex situ conservation**

The first talk of this technical session was by **Dr Uma Ramakrishnan**, Professor, National Centre for Biological Sciences focussing on building linkages between in situ and ex situ conservation paradigms.

The highlights of the talk were:

1. Unravelling the secrets of Wild Tigers using captive tiger populations and how conservation genomics helps a better understanding of endangered species.
2. The hypotheses and the attempt to answer big questions of- Will tigers go extinct in India, Why, Where and can we do anything about this? The premise that extinctions from a biological perspective are based predominantly on populations and are influenced by the genetic



diversity in said populations.

3. Global studies on genetic diversity of the Tiger genome and specific genetic variations have been successful and instrumental in finding answers due to the linkages with captive populations of Amur Tigers, Malayan Tigers etc.
4. This application of such studies such as Trafficking of Tigers in the United States.
5. The ongoing study about the pseudo-melanism phenotype, with genetic samples from Nandankanan Biological Park and Simlipal Tiger Reserve. The study indicates that the pseudo-melanism gene mutation is present in Tigers in Simlipal probably because this is a small and isolated population.
6. The relatedness of Tigers in Ranthambore Tiger reserve in Rajasthan was indicative of the genetic diversity within the population, implications of the relatedness allowing for predictions of population changes and even disease states.
7. These direct implications on management plans and policies. The ex-situ and in situ linkages intersected by academic research models allow for evidence or information-based breeding strategies and are a welcome addition to the development of research ideas and collaborations within and outside the zoo community.

### **Session Takeaways**

1. Incorporate programs and capacity-building initiatives for wildlife health and disease management at the zoo level and progress to the regional levels.
2. The zoos may work together and form a network for Laboratory support at the local level or regionally, especially with the universities and veterinary colleges.
3. Zoos should focus on understanding emerging infectious diseases and put in place plans for surveillance and management in accordance with their collection plans.
4. The zoo fraternity should aim for regular training and refresher courses should be undertaken to ensure continued engagement and the creation of an optimal number of trained veterinary





professionals.

5. Initiate cooperation at the local, national, and international levels to provide a network of support and share good practices and further co-operate in developing research and conservation breeding programmes.

### Session V - Holistic Planning of ex situ conservation in zoos

The first talk of this session was by **Shri Lakshminarasimha R**, Scientific Officer CZA which provided an overview of conservation breeding in Indian zoos - History, Progress and Perspectives.

The highlights of the talk were:

1. An overview of the conservation breeding programs of the Central Zoo Authority. The species selected for conservation breeding, their population status, global conservation status, coordinating and participating zoos and the extant guidelines for conservation breeding by the CZA.
2. An overview of the studbooks being managed for the conservation breeding of species.
3. An overview of the traits of the captive stocks managed in conservation breeding programs, trends in population growth, pedigrees, and genetic prospects.
4. The IUCN five step framework for planning ex situ conservation programs.
5. The applications that can be used to monitor progress of conservation breeding programs, including the aspects to be considered for formulating a conservation breeding plan.
6. The talk concluded with the emphasis that a review of the ongoing programs shall be undertaken to assess progress while accounting of historic trends of the species. The programs should be science-based and involve cross-institutional and interdisciplinary collaborations. Overall, the programs should proceed on the principles of adaptive management.



The second talk was by **Shri P C Tyagi**, Former HoFF, Tamil Nadu.

The highlights of the talk were:

1. Holistic and integrated planning is a subject that needs to be dealt with taking into account all aspects from the design of enclosures to the animal health care and welfare and immersive visitor experiences. This is all brought out with a comprehensive Master Plan document which is the blueprint for growth and development in a zoo.
2. Development in a zoo has multifarious activities that need to be running almost parallelly and thus integrated plans for enrichment, landscape development, education and outreach, sustainability, and disaster management play an important role.
3. It emphasised all aspects of animal care- welfare planning, enrichment activities with the use of appropriate naturalistic materials, implementation of best practices for species-specific husbandry, developing and monitoring complexity in enclosures and planned development of infrastructure viz a viz the zoo hospital.
4. The need for collaborations with universities and like-minded institutions, infusion of greater diversity and scientific rigour in research that will help ex situ management.
5. Considerations for branding, financial sustainability, and a positive visitor experience, not only from the displays and information and learning but also with the provision of appropriate visitor amenities. Visitor surveys thus form an important tool for identifying gaps and addressing issues in a timely manner.
6. Zoos have enormous strength and opportunity with large visitations and diverse collections making them ideal learning centres. Zoo science has progressed by leaps and bounds and zoos need to build meaningful collaborations to enhance ex situ management standards.





7. A follow-up presentation was made on the Management Effective Evaluation to apprise the zoo directors of the framework of the document and break down the criteria for the scoring pattern. The points included in the various elements and the indicators were explained in detail so as to help the zoos address the lacunae identified in the evaluation and facilitate future evaluations.

This was followed by experience sharing by the following two zoos:

The first presentation was by **Dr. Manoj Nair**, Director, Nandankanan Zoological Park, Bhubaneswar which highlighted the following:

- Formulating an effective process for improving communication between Central Zoo Authority and recognised zoos.
- A panel of firms/specialists with pertinent experience in Master Planning and preparation of animal enclosure drawings shall be drawn.
- A formalised framework for PPP and CSR may be developed.
- A compendium of best practices in zoo management shall be developed.
- Exposure visits aimed at knowledge exchange within Indian zoos and between foreign zoos.
- Regular publishing of the Indian Zoo Yearbook
- Animal collection planning by zoos

The second presentation by **Dr. Sunil Panwar**, Executive Director, Bannerghatta Biological Park, Bengaluru, Karnataka succinctly highlighted an interesting initiative by the zoo to demonstrate the various feed items offered to the animals by making an animal feed display unit. The unit has feed charts and resin samples of food fed to the various animals. Food inspection and cooking videos are displayed to visitors.







## Valedictory

The valedictory session was presided by Shri Pradeep Kumar Amat, Hon'ble Minister Forest, Environment and Climate Change Department, Govt. of Odisha, Shri Debidutta Biswal, Principal Chief Conservator of Forest & Head of Forest Force, Shri Sushil Kumar Popli, Principal Chief Conservator of Forest & Chief Wildlife Warden.

Two films on providing a visual tour of Nandankanan Zoological Park and Species recovery of Gharial were released during the valedictory session by Shri Pradeep Kumar Amat, Hon'ble Minister Forest, Environment and Climate Change Department, Government of Odisha

Shri Pradeep Kumar Amat, Hon'ble Minister Forest, Environment and Climate Change Department, Government of Odisha, congratulated the zoo directors for being part of this workshop and for their efforts in ex situ management and for building the linkages between in situ and ex situ conservation.

The workshop ended with a vote of thanks by Dr Sanjay Kumar Shukla, Member Secretary Central Zoo Authority.

## Summary

The National Conference for Zoo Directors was a successful event with the attendance and active participation of more than 70 Zoo Directors, dignitaries, media personnel and experts from various fields of wildlife conservation and wildlife health. The discussions and exchange of ideas between the participants and the experts from various fields certainly create a positive impact on zoo management practices. At the 2021 UN Climate Change Conference (UNFCCC COP26), Hon'ble Prime Minister of India Shri Narendra Modi announced Mission LiFE (Lifestyle for the Environment), to bring individual behaviours to the forefront of the global climate action narrative. Zoos may take ownership of this initiative and develop as a strong platform to showcase how individuals and institutions alike could undertake simple acts in their daily lives that can contribute significantly to climate change.

## List of Participants

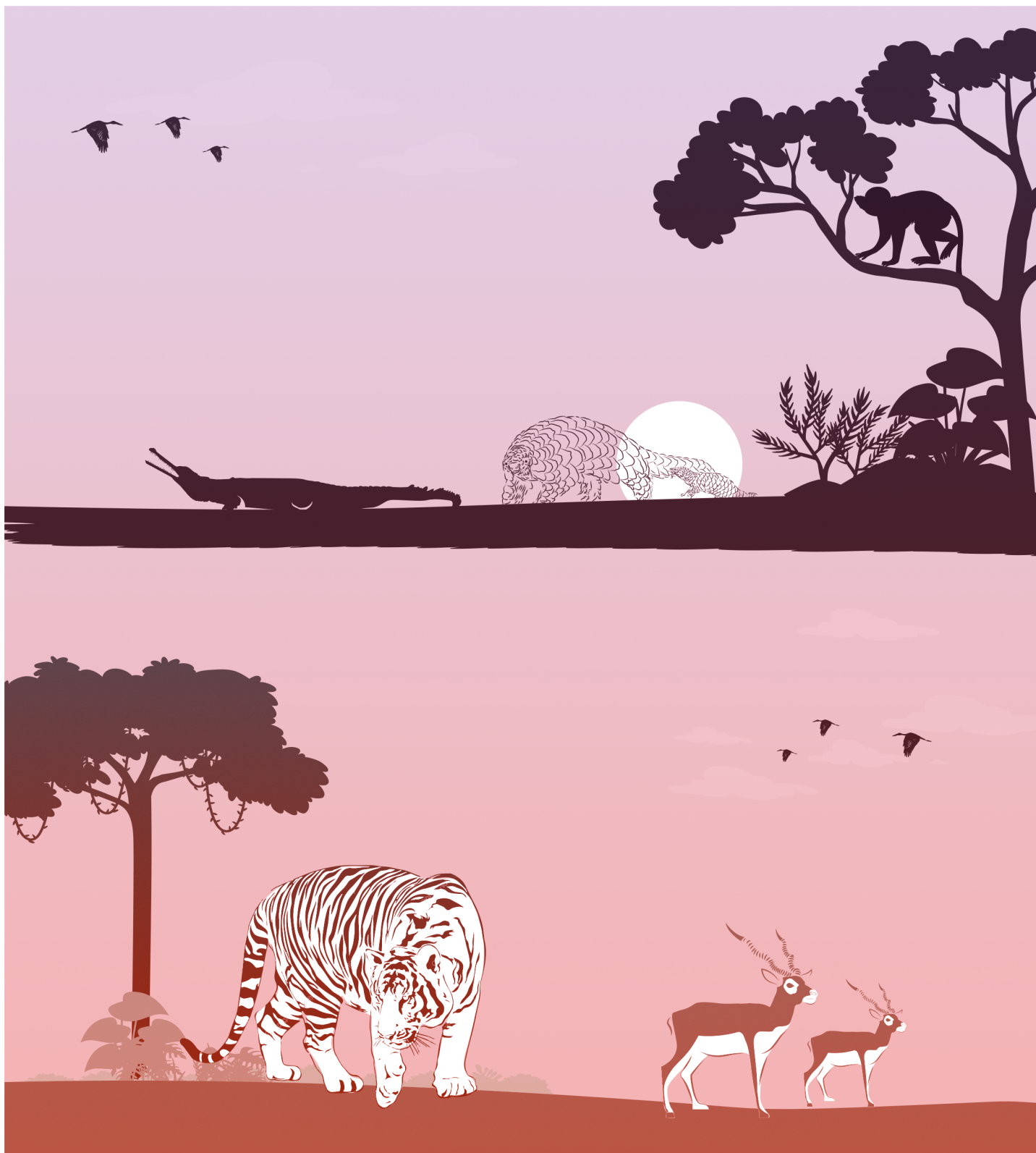
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