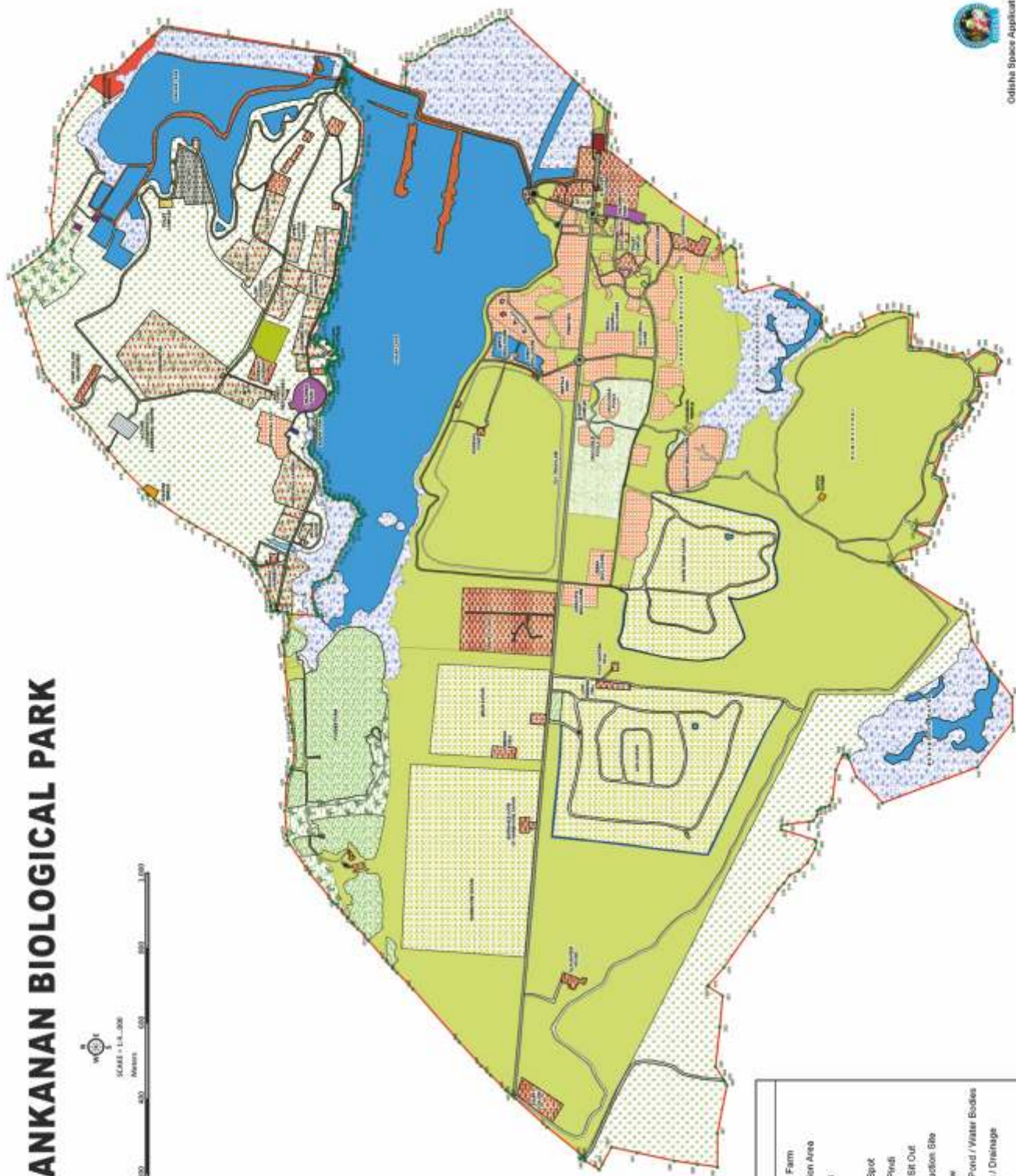
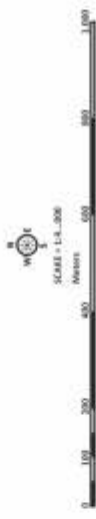


NANDANKANAN ANNUAL REPORT 2017 18




NANDANKANAN

MAP OF NANDANKANAN BIOLOGICAL PARK



LEGEND

Built-Up Area	Fodder Farm
Encroached Habitation	Plantation Area
Demolished House	Garden
Pump House	Park
Water Tank	Ponds Spot
Ticket Complex	Ponds Ponds
Major Road	Tourist Sit Out
Other Road	Construction Site
Road About	Meadow
Top Train Line	Lake / Pond / Water Bodies
Gate	Stream / Drainage
Enclosure (Animal / Bird)	Bridge
Safari Area	Marshy / Swampy Area
Safari Boundary	Embankment
Zoo Area	Temple
Sanctuary Area	



Odisha Space Applications Centre
Bhubaneswar



ANNUAL REPORT

2017-18



NANDANKANAN BIOLOGICAL PARK
B H U B A N E S W A R



P

PHOTOGRAPHS : Rajesh K. Mohapatra
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DESIGN & PRINT :
Reproprint Pvt. Ltd.
N-5/44, I.R.C. Village, Bhubaneswar-751015
Ph. : 9437025966
E-mail : reproprint_1234@yahoo.co.in

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FROM DIRECTOR'S DESK



Nandankanan Zoological Park is one of the premier large zoos of the country. Established on 29th December 1960 as the first zoological park of the State, it has progressively emerged as an eminent and vibrant centre for biodiversity conservation and environmental education. As a premier large zoo of India, it has spearheaded many significant improvements to provide highest standards of housing, husbandry and health care to the captive wild animals and contributed towards enriching our knowledge on the biology of endangered species.

It enjoys a special place in our country for its inimitable amalgamation of in-situ and ex-situ conservation initiatives. The Zoological Park together with the Kanjia lake and the Botanical Garden has been declared as Nandankanan Wildlife Sanctuary over an area of 4.37 sq.km on 3rd August, 1979. The sprawling zoo houses 156 species of amphibians, reptiles, birds and mammals. The natural forest areas of Nandankanan is home to a rich assemblage of free-living wild animals including 13 species of mammals, 15 species of reptiles, 71 species of birds, 20 species of amphibians, 85 species of butterflies and 51 species of spiders.

The State Botanical Garden which spreads over an area of 75 ha adjoining the Zoological Park was handed over to Nandankanan Management in August, 2006. This is one of the most important plant conservation facilities in the State. More than 704 species of plants have been documented in the State Botanical Garden.

There are two important wetlands present in Nandankanan namely Kanjia lake (66 ha) and Kiakani lake (25 ha). The former is the main water source for Nandankanan Zoological Park and State Botanical Garden. It support rich diversity of flora and fauna & is a veritable lab for wetland education. Therefore, it has been listed as a Wetlands of National importance by the Ministry of Environment, Forests and Climate Change, Government of India in the year 2006.

We have completed another outstanding year of biodiversity conservation, zoo management, research & education. Nandankanan has been very popular, as always, among the tourist & local habitants and attracted about 3.5 million visitors during the year 2017-18. Significant improvements were achieved in the infrastructure development, animal collection, care of rescued and infant animals, health care, fodder production and conservation research. Many zoo education and awareness programmes including Celebration of World Wetlands Day, World Pangolin Day, World Wildlife Day, Wildlife Week, World Elephant Day, International Tiger Day, Foundation Day, World Veterinary Day etc. were organized during the year 2017-18. Many species of wild and exotic animals including Indian tiger, Sloth bear, Indian pangolin, Chimpanzee, Mouse deer, Jackal, Jungle cat, Gaur, Common palm civet, Sambar, Brow antlered deer, Spotted deer, Hippopotamus, Blue faced lorikeet, Red jungle fowl, Indian peafowl, cockatiel, Jandaya conure, Sun conure, Mandarin duck, Swainson's lorikeet, Golden pheasant, Silver pheasant, Lady Amherst's pheasant, Java sparrow, Grey pelican, Black kite, Night Heron, Barn owl, Alexandrine parakeet, White Ibis, Budgerigar, Gharial, Mugger etc. have bred successfully in the Park during the year. Nandankanan had successfully reared very young babies of Indian tiger, Asian elephant, bonnet macaque and sloth bear, one each, during the period.

During the year, many enclosures and visitor amenities were renovated and supplemented with standoff barrier, signages and landscaping where ever necessary. Out of which Himalayan black bear enclosure and hyena enclosure, white peafowl enclosure, snake enclosures, centre for rearing of animal babies, provision of RO water plants are worth mentioning. The staff inhabiting inside the zoo premises were shifted to the newly constructed 72 quarters outside the zoo. A baby care house was constructed for visitors near Reptile Park to facilitate care for breast feeding babies.

During the financial year 2017-18 we have welcomed 18 new animals of 4 species to the Zoo in animal exchange programme with objective of infusion of new blood line to the existing stock and also addition of new species to the zoo collection. However, we said final adieu to some long-time residents of our Zoo, notably White Tigress Kusum and the reticulated python who were very popular among visitors. These animals are now a part of Nandankanan's history.

There has been a substantial improvement in the field of health care as reflected in reduced annual death rate during the year 2017-18. This was possible due to sincere efforts by our staff in order to maintain highest standards of health care and animal husbandry practices and close cooperation with college of Veterinary Sciences and Animal Husbandry, Odisha University of Agriculture & Technology, Bhubaneswar and also with the valuable advice and guidance of the Health Committee and Technical Committee on important health care issues.

The Zoological Park has always been an outstanding centre for education and research. Eight research papers were published during the year in different national and international journals and periodicals on various aspects of ex-situ conservation, health care and management of captive wild animals.

Information on various aspects of management and development of Nandankanan during the year 2017-18 has been provided in the present Annual Report. I would like to thank all my staff and officers for their dedication and hard work for one more successful year in the journey of Nandankanan. I am grateful to all who have helped and contributed in this journey from 1960 till date. I have to confidence to believe that Nandankanan will continue to grow as a world class zoo contributing significantly in the field of wildlife conservation, education and research in coming years.

Dr. H.S. Upadhyay , IFS
Director, Nandankanan Biological Park





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HISTORY OF THE ZOO



Nandankanan had a very interesting beginning. A number of wild animals (two spotted deer, two barking deer, two black buck, one mouse deer, one leopard cat, one flying squirrel, one r-tailed drongo, one hornbill, two parrots, two hill mynah, one peacock, one mongoose, one pangolin, two porcupines, a pair of wild boars and a python) were collected from different parts of the state for the World Agricultural Fair organized in New Delhi in Jan-Feb, 1960. After the end of the Agricultural fair, the animals were brought to Orissa in May, 1960 and housed near Khandagiri and exhibited to the people. Water scarcity was the main problem in this location and it was difficult to decide where to locate these animals. Then it was thought of establishing a Zoo as there was no zoo in the state by that time.

The then Chief Minister, Dr. Hare Krushna Mahatab and the Minister for Development Dr. Radhanath Ratha along with senior forest officials tried to locate a suitable site for establishing a zoo with good water source. After search for suitable area, it was found that a stretch of forest in the then famous Chandaka forest contain a good natural water body called Kanjia lake. This was close to the Barang Railway Station. It was decided to establish the zoo there taking part of Jujhagarh and Krishnanagar Demarcated Protected Forest (DPFs). Pursuant to the decision, construction activities were taken up over a very small area to house and animals.

On 29th December, 1960, Sri S.K. Patil, the then Minister of Food and Agriculture, Govt. of India inaugurated the new Biological Park named "Nandankanan" which means the heavenly garden of God. Subsequently, in the year 1963 a Botanical Garden came up adjoining to the park in the other side of Kanjia lake. The park along with the adjoining forests has been notified as Nandankanan Wildlife Sanctuary vide erstwhile Forest, Fisheries & Animal Husbandry Department, Government of Orissa Notification No. 8F(WL)-160/78-20672/FFAH dated 3rd August 1979 and published in the Official Gazette vide S R O No.935/79 dated 3rd August 1979. The Nandankanan Biological Park subsequently in 1980's was renamed as Nandankanan Zoological Park on recommendation of the Orissa Legislative Assembly Committee on Estimates, 1981-82. The zoo started growing slowly with addition of new enclosures. The first tiger was brought to the zoo in the year 1964 from the Alipore Zoo in Calcutta along with a pair of African lions, a puma and a pair of muggers during All India Congress Committee session at Bhubaneswar. In 1967, the first open air tiger enclosure was constructed in the zoo and it surprised everybody that the last surviving tigress in Chandaka forest was lured on the 04th January, 1967 into this enclosure, where a male tiger "Pradeep" was already housed. She was named "Kanan" by the zoo officials. Proximity to wilderness has led to another interesting incident in 1964, when a courting wild tusker kidnapped a cow elephant from the zoo. However, the cow elephant returned to its enclosure later.

Nandankanan attained distinction in first ever breeding of the Gharial in captivity in a naturalistic pool created for the purpose, through a full grown male gharial was brought from Frankfurt zoo on breeding loan. This happened on 7th May, 1980 with 24 hatchlings hatched in the gharial pool. In the same year, 2 normal coloured tigers 'Deepak and Ganga' gave birth on the 8th January, 1980 to 3 white off-springs named 'Debabrata', 'Alaka' & 'Nanda' creating history. With this, Nandankanan created its own family of white tigers and a separate gene pool. The park forged ahead in its developmental activities under the advise & guidance of Nandankanan Development Board to become a leading zoo in the country with wide variety of animals in near natural environment. On 20th Jan 1984, a Lion safari over 20 ha. was inaugurated inside the zoo premises. There after the first White Tiger safari spread over 12 ha was also established in the year 1991. Two more safaris namely Herbivore safari (21ha) and Bear safari (5 ha) were established in 2011 and 2012 respectively.

The zoo has bred number of species of animals, birds and reptiles. Many of them are endangered as per the Wildlife Protection Act, 1972. Some of them are tigers (normal colored and white), leopards (black & normal), Asiatic lion, all the 3 Indian crocodiles, Indian tiger, elephant, lion-tailed macaque, Nilgiri langur, peafowl, Indian pangolin, thamin deer, ratel, black kite, water monitor lizard, gaur, and many others. A toy train has been in operation in the park since 10th August'1971 donated by the Ministry of railways, Government of India. A rope way also links zoological park with the botanical garden since 01.10.1994. An aquarium was dedicated to visitors in 4th February, 2008 by the Honourable Chief Minister, Odisha. Gradually many facilities like electronic entry gate, battery operated vehicles, RO drinking water kiosk, interpretation centre, zoo museum, live feed rearing centre etc. were added or renovated for better management of animals and visitors.



VISION

To be a leader in biodiversity conservation and zoo animal care.

MISSION

To achieve the distinction of an outstanding zoo through World Class Conservation, Education, Research and Exciting visitor experiences by connecting people to biodiversity conservation.



OBJECTIVES

Housing of wild animals and birds with special emphasis on research and education on their ecology, behavioural biology, physiology and enrichment in a semi-natural environment.

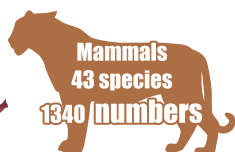
- Conservation breeding of the endangered species in captivity with least human imprints and to release them in nature to recoup their status in the wild.
- To facilitate research and scientific study on animal behavior, enclosure enrichment, feed, nutrition and reproductive biology.
- To promote education & awareness amongst visitors towards conservation of wildlife.
- To ensure housing of captive animals and birds with special emphasis on health care, animal welfare and excellent animal husbandry.

NANDANKANAN ZOOLOGICAL PARK

Nandankanan Zoological Park is one of the premier large zoos located amidst a beautiful natural setting recognized by Central Zoo Authority, Govt. of India. Unlike conventional zoos, it spreads over vast 3.62 sq.km of undulating topography with natural moist deciduous forest, water bodies and enchanting landscape that provides the zoo inhabitants an appropriate ambience to live in harmony with the nature. It was dedicated to the public on 29th December 1960. More than 3.29 million tourists visited the Zoological Park during 2017-18. Most of the animals of Nandankanan live in open, large moated areas surrounded by natural vegetation. This gives them a feeling of living close to their natural habitat. The Zoological Park is a part of Nandankanan Wildlife Sanctuary.

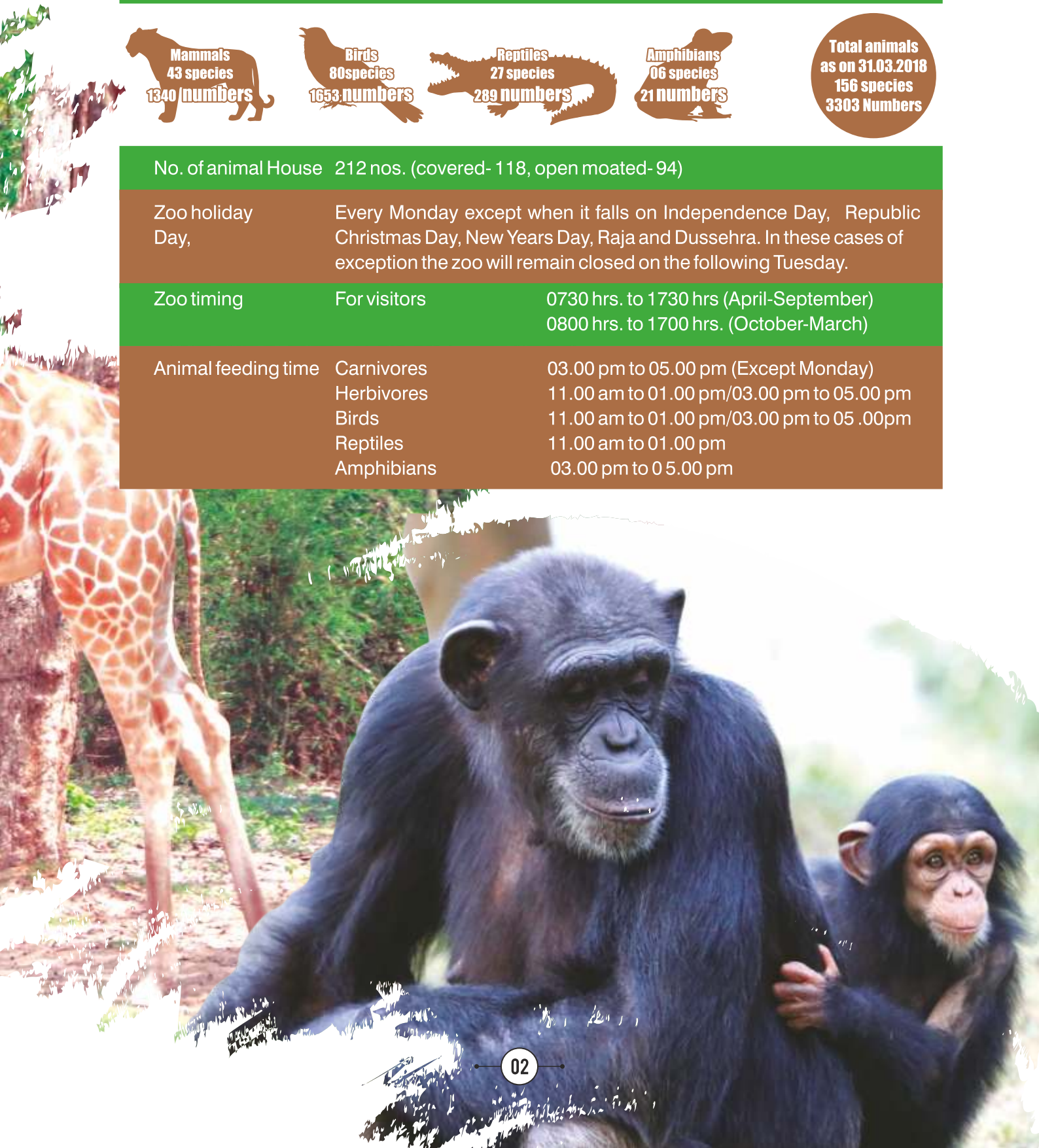
SALIENT FEATURES

Area	Nandankanan Zoological Park	296 ha. (2.96 Sq.Km.)
	Kanjia lake	66.1 ha. (0.66 Sq. Km.)
	State Botanical Garden	74.74 ha. (0.75 Sq.Km.)
	Nandankanan Wildlife Sanctuary	436.84 ha. (4.37 Sq.Km.)



**Total animals
as on 31.03.2018
156 species
3303 Numbers**

No. of animal House	212 nos. (covered- 118, open moated- 94)	
Zoo holiday	Every Monday except when it falls on Independence Day, Republic Day, Christmas Day, New Years Day, Raja and Dussehra. In these cases of exception the zoo will remain closed on the following Tuesday.	
Zoo timing	For visitors	0730 hrs. to 1730 hrs (April-September) 0800 hrs. to 1700 hrs. (October-March)
Animal feeding time	Carnivores	03.00 pm to 05.00 pm (Except Monday)
	Herbivores	11.00 am to 01.00 pm/03.00 pm to 05.00 pm
	Birds	11.00 am to 01.00 pm/03.00 pm to 05.00pm
	Reptiles	11.00 am to 01.00 pm
	Amphibians	03.00 pm to 05.00 pm



SPECIAL ATTRACTIONS

The sylvan setup of the Park provides many special features which attracts the visitors in large numbers.



Boating

Boating on paddle or row boats in the blue water of Kanja lake is an exhilarating experience. The multi-storey Boat Ghat is renovated to give new looks providing enough space for the visitors to relax and enjoy the picturesque fresh water spreading over an area of 66.1 ha. lake. The lake is also known for its rich floral and faunal diversity and is declared as a Wetland of National Importance by Govt. of India in 2016.



Tiger safari

A unique tiger safari established on 1st October, 1991 over an area of 12 ha in natural surroundings. It provides exposes you to unique situation where the visitors are confined in a vehicle and the animals roam in the open jungle. Nandankanan is the first zoo in India with melanestic tigers in the safari.



Lion safari

A twenty-minute drive through the meandering roads crisscrossing the natural forest in a specially protected vehicle takes the visitors straight into pride of lions in the lion safari over an area of 20 ha established in the year 1984.

Herbivore safari

Herbivore safari was established in the year 2011-12 extending over an area of 21 ha. with a road network of 2 Km. length. The safari houses Barking Deer, Spotted Deer, Sambars, Four horned antelope, wild boar, jungle fowls, peafowls etc.





Bear safari

A Bear safari covering an area over 4.1 ha. has been established in the zoo during the year 2012-13. Visitors can avail opportunity to sight sloth bears in their natural habitat through safari bus service.



Nocturnal Animal House

Many animals that only move freely at night but are almost immobile and hide in the thicket or in their burrows during the day are housed here. The twilight condition is created in these enclosures to provide an opportunity to the visitors to know what these animals secretly do in the darkness of the night. It is one of the best nocturnal house in the country.

Reptile Park

A reptile park, with a life size Tyrannosaurus at its entrance with an interpretation centre houses 26 species of reptiles including crocodiles, lizards, turtles and snakes. One would encounter crocodiles, king cobras, Iguanas and Reticulated Python inside the reptile park.



Reptile Interpretation Centre

An Interpretation Centre depicting the evolution and biology of reptiles has been established in 2012 at the entrance of Reptile Park displaying models of prehistoric animals.



Toy Train

The toy train has been a great attraction for the children. It starts from the toy train station which goes round a circular track of 1.58 Km. along the lake and thickly vegetated hillock area with free ranging herbivores. The entire facility is now under renovation. It is expected to operate shortly.



Aquarium

Aquarium is an integral component of a modern zoo. Adequate steps were taken to include well researched education materials on the various aquatic ecosystems both marine and fresh water indicating their uniqueness and conservation needs. The aquarium was dedicated to the visitors on 4th February, 2008 by the Honourable Chief Minister, Odisha.



Library

If one has got time and an aptitude for learning then the centrally located library, with a wonderful collection of more than 3000 books and journals on wildlife, veterinary and other matters can serve one's satisfaction.

Interpretation Centre

The Interpretation Centre has been established near the entrance gate. The Centre has display boards, models and audiovisual aids depicting the importance of Zoological Park and other important wildlife areas of Odisha. It also displays the activities behind the scenes for creating awareness amongst the visitors. A film on Nandankanan is also screened in the mini-auditorium inside the Centre.



Zoo Museum

The zoo museum established in Nandankanan to preserve, display and interpret the animal specimens of zoological importance for public viewing and nature education. The museum displays taxidermy specimens, formalin preserved specimens of early developmental stages of animals and eggs of flightless birds. This facility will be of great interest to the visitors in general and school children in particular.



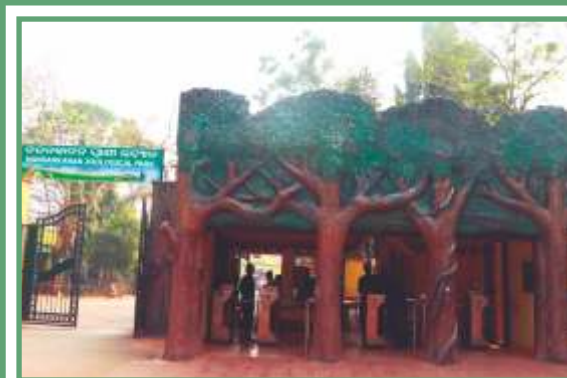
Battery Operated Vehicle

To facilitate elderly and physically challenged visitors in particular and tourists in general, Battery Operated Vehicles (BOVs) are available for tourists for an hourly trip around the zoo on payment of Rs.50/- per head and Rs 750/- and Rs 500/- per trip of large and small BOVs respectively.



Electronic gate entrance system

An automated electronic entry gate system has been installed in the Zoological Park on 30th March, 2012. Each visitor is issued with a bar-coded ticket for entering through any of the six electronic gates into the park. This gives an exact figure of adult, children and foreigner visitor entry statistics at any point of time. This facility is the first of its kind for entry into any tourist place in Odisha. On-line ticket booking system is also facilitated for the visitors. LED display screen installed for information to the visitors.



Amphibian enclosure

An amphibian enclosure has been established with viewers gallery over a plinth area of 56 m². Necessary behavioural enrichments like flowing water, saw dust, live plants, water pool etc. have been provided within the enclosure. The enclosure is designed to house and display amphibian species. Nandankanan is the first premier large zoo to exhibit amphibians. At present there are 21 numbers of amphibians belonging to six species.



Walkthrough Aviary

The walkthrough aviary for exotic birds is a unique exhibit of its kind in the country. The walkthrough aviary has a cascading waterfall and a meandering water channel of 58 m length connecting two pools having two arched cross over bridge along the 216 m laterite stone paved walking path with separate entry and exit points. In addition to the existing large and small trees, hundreds of selective plants have been planted to provide perches and hiding places for the birds housed. There are enough feeding points and nest boxes for use of the birds selectively. The inmates of the aviary are mixture of arboreal, terrestrial and aquatic birds. It is a visitor's delight to view the free flying birds over head.



Open top leopard enclosure

The new open top Leopard enclosure in Nandankanan is one among the very few in the country which attempts to exhibit this species in a large naturalistic enclosure which is open to the sky. This enclosure has been designed aesthetically to maximise visitor satisfaction without compromising the safety and security of the animal as well as visitors. The enclosure which has an exhibit area with a deep dry moat, also has four feeding chambers and two back kraals. The entire enclosure has existing natural vegetation including two large *Ficus bengalensis* trees together with other trees and bushes. In addition, environmental enrichment by way of machan platforms, stone cave, wooden logs, water trough etc. has been provided to encourage them to indulge in natural activities.

Other services :

- Interactive education & awareness programme
- Conducted tour for school children.
- Availability of trained guides.

A photograph of two elephants in a zoo enclosure. The elephants are standing on a bed of reddish-brown mulch. The elephant on the right is larger and has its trunk raised, while the one on the left is smaller and also has its trunk raised. They are both facing left. The background shows green trees and a clear sky. A green rectangular box is overlaid on the left side of the image, containing the text 'VISITORS' AMENITIES' and a list of amenities.

VISITORS' AMENITIES

- RO water kiosks
- Toilets at convenient locations
- Special toilets, wheel chairs & ramps for differently abled persons
- Rest areas / sit-outs / visitors' shed at various locations.
- Tourist cottages
- Restaurant & Snacks bar (run by OTDC)
- Cloak room
- Perambulator for children
- First-aid (at zoo hospital, administrative office & observatory)
- Library
- Baby Care House
- Emission free battery operated vehicles
- Guide maps
- Children Park
- Souvenir shops

ENTRY FEES AND OTHER CHARGES NANDANKANAN ZOOLOGICAL PARK

Entry Fee:

Indians (Above 12 years)	: Rs.50/-
Children Age group of 3-12	: Rs. 10/-
Foreign visitor	: Rs.100/-
Tourist Cottage	: Rs.200 & 300/-
Handy cam camera	: Rs.100/-
High end Video Camera (Amateur Photographer)	: Rs.500/-
Movie Camera(Professional Photographers)	: Rs.4,000/-

Safari

Lion safari	: Rs.15/-
White tiger safari	: Rs.15/-
Herbivore safari	: Rs.15/-
Bear safari	: Rs.15/-

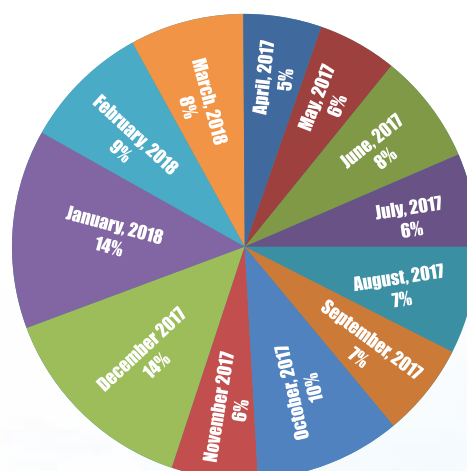
Toy Train	: Under renovation
Boating (for 30 minutes)	
Paddle Boat (2 seater)	: Rs.50/-
(4 seater)	: Rs.100/-
Family boat	: Rs.150/-
Battery Operated Vehicle	: Rs. 50/- per person Rs.750/- large BOV/Trip Rs.500/- small BOV/Trip

FREE FACILITIES

Aquarium
Cloak Room
Differently able persons
Children below 3 years
Film Still Camera
Digital Still Camera
Perambulator for children
Walk through aviary
RO Water & use of toilets
Wheel chair for differently able persons

Month wise number of visitors during 2017-18

Month	No. of visitors	Month	No. of visitors
April	1,79,373	October	3,38,905
May	1,80,845	November	2,00,300
June	2,49,213	December	4,72,359
July	2,11,985	January	4,63,049
August	2,27,108	February	2,89,732
September	2,23,617	March	2,55,032
Free entry of school children during Wildlife Week & Childrens' Day			3,591
Free entry of differently abled persons			4,195
TOTAL			32,99,304



HUMAN RESOURCES

(A) Director's Office in Mayur Bhawan, Bhubaneswar

Sl.No.	Designation	Number of Sanctioned Posts	Names of the incumbent	No. of vacancy
1	Director	1	1	-
2	DCF	1	1	-
3	Forest Range Officer	1	-	1
4	Senior Steno	1	-	1
5	Senior Clerk	4	2	2
6	Junior Clerk	4	4	-
7	Driver	1	1	-
8	Office Chowkidar	1	1	-
9	Office Sweeper	1	1	-
10.	Office Peon	1	-	1
	TOTAL	16	11	5

(B)Deputy Director Office, Nandankanan Zoological Park

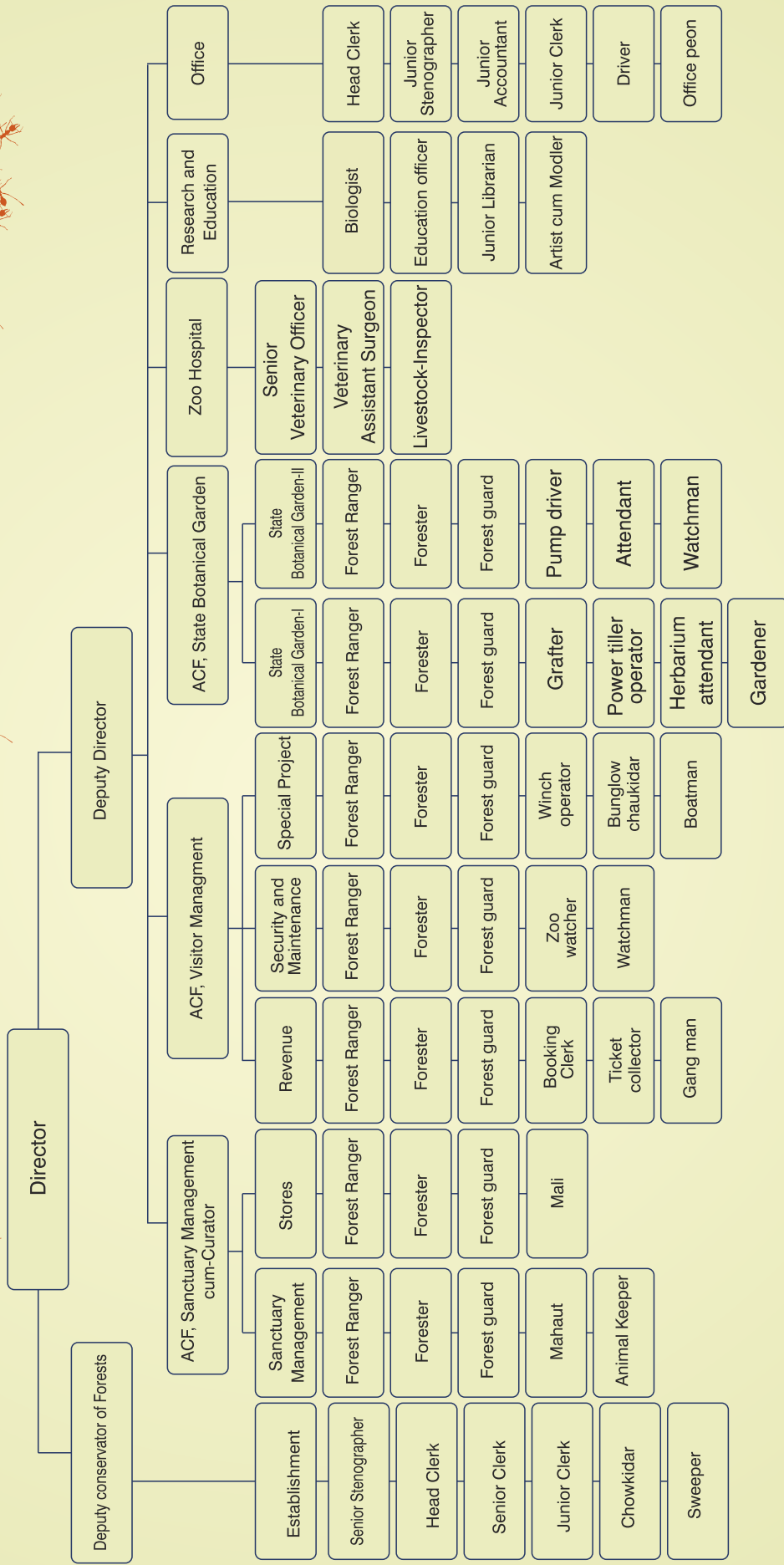
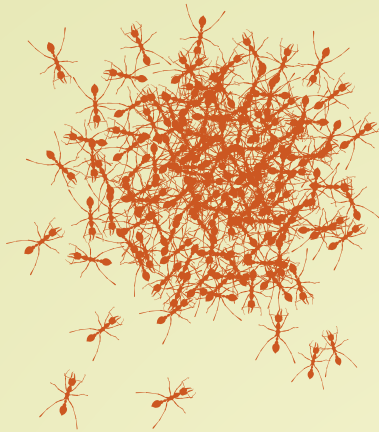
Sl.No.	Name of each	Sanctioned category of post.	No. of staff strength.	No. of vacancy in position.
1	Deputy Director	1	1	0
2	Senior Veterinary Officer	1	1	0
3	ACF	3	3	0
4	Veterinary Assistant Surgeon	1	1	0
5	Forest Ranger	8	7	1
6	F.E.S.	1	0	1
7	Head Clerk	1	1	0
8	Biologist	1	1	0
9	Education Officer	1	1	0
10	Dy. Ranger	1	1	0
11	Fitter-cum-Mechanic	1	0	1
12	Junior Accountant	5	2	3
13	Junior Stenographer	1	1	0
14	Forester	9	8	1
15	Driver(H.V)	3	3	0
16	Driver (L.V.)	4	2	2
17	Livestock-Inspector	3	2	1
18	Projector Operator	1	0	1
19	Junior Librarian	1	1	0
20	Artiste- cum- Modeler	1	1	0
21	Guide	1	0	1
22	Junior Clerk	4	4	0

23	Booking Clerk	3	2	1
24	Engine Driver	1	0	1
25	Welder-cum-Blacksmith	1	0	1
26	Forest Guard	25	19	6
27	Mahout	8	0	8
28	Mali	5	3	2
29	Khansama	1	1	0
30	Mahout	3	3	0
31	Asst. Mahout	8	0	8
32	Animal Keeper	101	76	25
33	Office Peon/Attendant	6	5	1
34	Sweeper	11	9	2
35	Bungalow Chowkidar	3	1	2
36	Winch Operator	1	1	0
37	Gangman	2	0	2
38	Ticket Collector	10	5	5
39	Mate	2	1	1
40	Boat Man	2	0	2
41	Zoo Watcher	22	19	3
42	Watchman	27	24	3
43	Cook-Cum-Animal feed Distributor	2	1	1
GRAND TOTAL:		297	211	86

(C) Sanctioned strength and present staff strength of State Botanical Garden

Sl. No.	Name of each category of post	Sanctioned strength	No. of staff in position	No. of vacancy
1	Curator	1		1
2	Horticulture overseer	1		1
3	Senior clerk	1	1	0
4	Artist	1		1
5	Junior typist	1		1
6	Grafter	2		2
7	Pump driver	1		1
8	Power tiller operator	1		1
9	Herbarium attendant	1		1
10	Gardener	6		6
11	Attendant	6		6
12	Peon	3	1	2
13	Watchman	1		1
Total staff strength of State Botanical Garden		26	2	24

Its all about team work...



CAPACITY BUILDING OF ZOO PERSONNEL

Sl. No.	Name and of the zoo personnel	Subject matter of Training	Period of Training	Name of the Institution where the Training attended
1	Dr. Debabrat Mohapatra, Specialist	Capacity building of Indian Zoo veterinarians on animal health management in captivity	16 th -19 th September, 2017	National Zoological Park, New Delhi
2	Dr. Rajesh Kumar Mohapatra, Biologist	Mid-level officials training programme	11 th -14 th December 2017	Sanjay Gandhi Biological Park, Patna
3	Mr Sisir Kumar Acharya, Director	'Vision 2030 of zoos in India': Annual conference	18 th -21 th December 2017	Chamrajendra Zoological Gardens , Mysore.
4	1. Prafulla Bag, AK 2. Dukhishyam Behera, AK	Zoo keepers training programme on CZA Vision 2030	20 th -25 th March, 2018	Nandankanan Zoological Park, Bhubaneswar
5	1. Arup Kumar Rout, FR 2. Milibala Jena, FG 3. Rama Chandra Kandi, FG	Training programme on tranquilization techniques for front-line Staff	28 th -29 th March 2018	Nandankanan Zoological Park, Bhubaneswar



FINANCE

Revenue collected

An amount of Rs. 1429.50 lakhs was generated towards revenue from all sources during 2017-18.

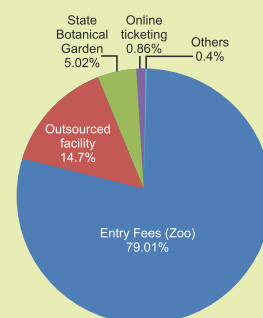
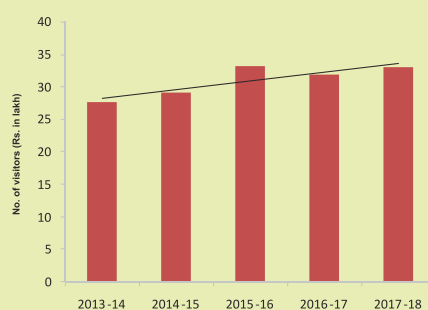
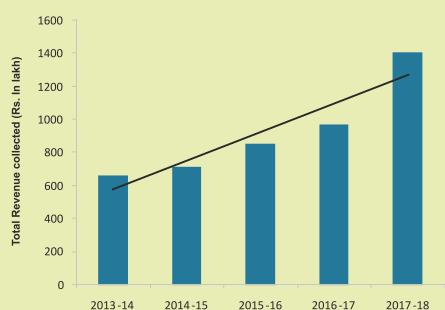


VISITOR FLOW AND REVENUE GENERATED DURING THE YEAR 2017-18

Item	Visitors number	Revenue(in rupees)
Entry fees		
Common Visitors (Above 12 years)	2815313	107963645
Children (3 to12 years)	421331	4213310
School children	42999	429990
Foreign visitors	1030	103000
Online booking- Adult	8470	0
Online booking- Children	2354	0
Online booking- Foreign Visitor	21	0
Free entry during Wildlife Week and Childrens' Day	3591	0
Free entry of differently abled persons	4195	0
Still camera	24	120
Digital camera	4635	46350
Handycam	808	80800
Video camera	1	500
Aquarium		112980
Outsourced facility		
Boating facilities		1217260
Safari facility		9750578
Rent of Parking Place		5218296
O.T.D.C. Restaurant		96000
O.T.D.C. snacks bar		72000
Cloak room		107432
Rent of Weighing machine		24192
Rent of BOV facility		3581661
Rent of Aquarium		377748
Rent of Souvenir shop		194229
Rent of ATM counter		186660
Sale of waste cattle bones		105000
Rent of Gate complex toilet		30135
Walk Through Aviary		58391
State Botanical Garden (SBG)		
Revenue collected at SBG		7173980
Online ticketing		
Online entry/facility reservation charges (zoo and SBG)		1236371
Others		
Tourist cottage		1000
Fine collected		10900
Forfeited EMD amount		282190
Cost of tender paper		109644
Sale of books		5900
Adoption of animals		160376
Total revenue collected		Rs. 14,29,50,638

Revenue generated during last five years

Visitor flow to Nandankanan Zoological Park during last five years		
Year	No. of visitors(in lakh)	Total Revenue collected (Rs. in lakh)
2013-2014	27.615	664.49
2014-2015	29.047	716.86
2015-2016	33.193	856.90
2016-2017	31.813	969.53
2017-2018	32.993	1357.77



Allotment and Expenditure of Nandankanan Zoological Park during the last five years: (Amount in Lakhs of Rupees)

Year	Expenditure & Allotment	Non-Plan	State-Plan	Central Plan	Centrally sponsored plan	CZA grant	CAMPA	Society Fund	Total
2013-14	Allotment	693.84	16	-	6.51	38.42	63.28	1157.03	1965.08
	Expenditure	689.55	16	-	6.51	9.723	63.24	893.03	1678.05
2014-15	Allotment	778.34	7	-	6.29	40.12	60	1063.5	1955.25
	Expenditure	760.64	7	-	6.29	27.09	31.44	881.3	1713.76
2015-16	Allotment	707.93	65.7	-	6.65	15	119.75	944	1859.03
	Expenditure	698.84	65.7	-	6.65	15	118.78	767.91	1667.87
2016-17	Allotment	859.84	12.1		8.886		587.08	1113.12	2581.046
	Expenditure	859.83	12.1		8.886		533.26	867.381	2281.457
2017-18	Allotment	1067.6	511.7	Nil	8.25	3.7	204.76 (continuing)	1221.6	2812.85
	Expenditure	1025.3	511.7		8.25	2.9	147.18	1129.0	2677.15



EXCHANGE OF ANIMALS

Arrival of new animals under animal exchange programme (2017-18)

Name of the zoo	Animal sent	Date of deposition from the zoo	Animal brought	Date of arrival in the zoo
Arignar Anna Zoological park, Vandalur, Chennai	Himalayan bear (1M+1F) White ibis (5M+5F) Open billed stork (2M+2F) Water monitor lizard (1M+1F) Siamese crocodile (1M)	21/09/2017	Nilagir Langur (1M+1F) White pea fowl (2M+2F) Painted stork (10U) Reticulated python (1M+1F)	26/09/2017

GLIMPSES OF THE EVENTS OF 2017-18

R.O. Drinking Water Facility for Visitors

Five nos of R.O. plants (four at zoological park and one at Botanical garden) were established to provide purified drinking water to the visitors.

Baby Care House

One Baby Care House was established near Reptile Park to facilitate the mother to breastfeed their babies. One lady personnel of the zoo was provided at this care house for safety and security.

Hyena Enclosure

This enclosure was very old, small and in dilapidated condition to accommodate the existing 7 (3:4) Hyenas in the Zoo. For better management of the species, the enclosure was completely renovated and completed within a time of one year. The total area is 1810 sqm. The above enclosure has 6 no. of feeding chambers, keeper's corridor, 4 no of back kraals, 2 no of display area with moats and habitat friendly enrichment. This enclosure was dedicated to visitors on 17th October 2017.

B.O.V. Facility

This facility has been constructed on a flat ground over an area of 209.43 sqm. As there was no designated place for a shed cum waiting room as a result of which visitors were suffering to book tickets and waiting for vehicle etc under sun and rain for hours together. The iron topped facility has granite sitting arrangement for visitors, ticket counter of 7.5 m2 area and with accessibility for wheel chair. This facility was dedicated to visitors on 17th October 2017.

Himalayan Black Bear Enclosure

The new Himalayan Black Bear enclosure with an area of 159 sqmt was small enough to accommodate 2 Himalayan Black Bears. The total area is 1350 sq. mt. The above enclosure has 147 mt of solid concrete peripheral wall, 2 nos. of feeding chambers, keeper's corridor, 3 nos. of back kraal, 21 mt long dry moat, Paved visitor path with stand-off barrier & screening, magnificent displaying area with habitat friendly enrichment and waterfall with central pool are the following facilities for better management and health care of species. This enclosure was dedicated to visitors on 29th December 2017.

Others

Construction of Nursery for rearing of animal babies, new unit for welding and carpentering in workshop, Keeper sheds, extension of snake enclosures in Reptile Park and stand-off barriers at different enclosure renovation were carried out in the Park during the year. Many visitor facilities were constructed and renovated of which RO water plants & rain shelters were worth mentioning.

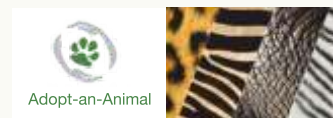


Health Check-up of employees for zoonotic diseases:

Health Check-up of 173 employees was carried out on 26th and 27th March 2018.

Become a Care Giver : Our Animal Adoption Scheme

A people's movement towards Conservation and Preservation of flora and fauna brings in higher dividends. Zoos across the world have evolved Adoption Scheme with a primary intention of involving general public in the Conservation of endangered animals, birds and reptiles. Herein lies the fact that, individual, philanthropists, organizations, corporate can adopt an animal by way of contributing the feed cost of individual animal including its maintenance and veterinary health care.



List of Donors for 2017-18:

Serial No	Name of the persons/Institution	Animals/Birds/Reptiles adopted	Period of adoption
1	Dr CBS Sanger Sr. Vice President Bhushan Steel Limited Narendrapur, Meramandali Dhenkanal, Odisha	2 nos. of Green Winged Macaw	1 st January 2017 to 31 st December 2017
2	Addl. General Manager, CSR Odisha Mining Corporation Limited OMC House Bhubaneswar-751001	5 nos of Royal Bengal Tiger	15 th February 2017 to 14 th February 2018
3	Dr Durga Prasad Udgata S/O- Mr Rajnikanta Udgata Sangram Club Lane Badasanka, Puri, Pin-752002	One Budgerigar	27 th November 2017 to 26 th November 2018
4	Sri Trinath Nayak At -Arapur, Po- Dulanapur Dist-Cuttack, Odisha	One Spotted Munia	3 rd November 2017 to 2 nd November 2018
5	Sri Reyansh Ray Das Lakshmi Vihar, Shikarchandi square Bhubaneswar, Odisha	One Blackbuck	05 th December 2017 to 4 th December 2018
6	Sri P. Ekagra New A.G. Colony Nayapalli, Bhubaneswar, Odisha	One Fresh Water Turtle	25 th January 2018 to 24 th January 2019
7	Montanna Waters Unit -3, Burke Road Kew Victoria, Australia	One Flap Shell Turtle & One Water Monitor Lizard	17 th February 2018 to 16 th February 2019
8	Ambrose Phey 23 Summer Hill Avenue Victoria 3150, Australia	One Emu	17 th February 2018 to 16 th February 2019
9	Clare Shelton 225 Whitelaw Avenue Delacombe Victoria 3356, Australia	One Rock Python, One Cockateil & One Java Sparrow	17 th February 2018 to 16 th February 2019
10	Ben Harper 14 Nelson Road, Camberwell Victoria 3124, Australia	One Koel & 2 nos of Night Heron	17 th February 2018 to 16 th February 2019
11	Stefanie Gulli 49 Westbury Terrace, Highton Victoria 3216, Australia	One Budgerigar & One Indian Star Tortoise	17 th February 2018 to 16 th February 2019

IMPRESSION OF OUR ESTEEMED GUESTS

It was a fascinating experience for us to visit the park. It is superbly planned maintained and keeps the attraction of nature alive in you.

It was a fascinating experience for us to visit the park. It is superbly planned maintained and keeps the attraction of nature alive in you. Collection, providing natural habitat to animal is not a small job. Hats off to the staff and leader for their excellent work. I pray for continuation these excellent jobs. The company of Mr. Rajesh was an add advantage.

Prof. Firoz Ahmad
Ex. VC, Nilamber Pitamber University
Palama- 13.04.2017

It is a great opportunity to see such wonderful collections of species at one place. Probably the unique place in India. The efforts put in by the staff is really commendable. It is a unique experience to see melanistic tigers. The visit is highly educative and memorable. I had visited this park almost 20 years back and the present developments fantastic and praiseworthy. I carry all sweet memories of this park.

Nagesh Prabhu, IFS
Member Secretary, Cultural Silk Board
21.04.2017

Enjoyed the evening visit to the carnivore enclosures. Glad to see the general maintenance and health of the animals. Grateful to Dr. Kamal Purohit for his personal care- as always

Gajapati Dibyasingha
Sri Nahar, Puri
02.05.2017

We are very thankful to the current and previous directors of Nandankanan to show us around this huge zoo. I saw black and white tigers for the first time in my life. The zoo is very well maintained and animals are well looked after. I was also impressed with the veterinarians in-charge who is very knowledgeable and takes preventive measure to control the diseases in animals and birds. The waterfowl's sanctuary is also very good. The lake is very peaceful. In summer, I am very impressed and I wish them the best.

Sagar Goyal, DVM, Ph.D
Professor of Virology
University of Minnesota, USA

I am greatly impressed by the facilities, number of fauna especially white tigers was a treat to eyes to see this and will remember it for long time. We are highly grateful to the present and past Directors for maintaining this beautiful zoo in such a nice condition. Team of vets are also playing very important role seeing health of animals. Lake is

a treat and wish to see it full of birds in winters some time. Wish it continues to progress and provide facilities to public/students/researchers to create awareness for loving nature. Thanking again.

N.K. Mahajan
Professor and I/c Wildlife
Lala Lajpat Rai University of Vet & Animal Science
Hisar (Haryana)

I visited Nandankanan Zoological Park along with Director and officers and staff. It is one of the zoos in the country displaying unique animals from India and across the world. The management deserves to be complemented he maintaining such a world class facility. My best wishes for further development and improvement of the park.

R.K. Srivastava, IFS
IF Forests (Project Elephant)
Govt. of India
05.09.2017

Visited Nandankanan on 21.10.2017, overwhelmed hospitality and technical assistance of Milan Panda, Samir Sahu, Rajesh Mohapatra- Spent about 90 minutes and visited many enclosures and we loved them. Mr. Milan Panda accompanied us and guided us. The trip was excellent and we are happy to see Nandankanan, which is so well maintained and managed. My two grand children Ishani and Anurita Kiran, wife Sovita and son Dr. Satya Prakash and his wife Maria were so happy. I cannot express. This trip could be possible because of the Director Acharya. Dr. Sudarsan Panda and the names of officers cited above. The driver, Prasant's good gesture is praiseworthy. It was a good day for us.

Prof. M.C. Dash & family
Vice-Chancellor, Sambalpur University
Chairman, SPCB, Odisha & Member Wildlife Board
21.10.2017

One of the best zoo I have come across in recent pass. I was happy enough to have darshan of big cats. The officers of Forest & entire management are very courteous. I wish them all the best.

Ghulam Nabi Azad
Leader of Opposition
Rajya Sabha
04.11.2017

Visited the park with Sri Milan Panda, found the excellent management practices in the park. The animal up-keep is excellent, shall remain learning for all zoological park managers. Thank you very much the park management for everything.

A.K. Bhatt
APCCF, Chhatisgarh
Raipur, 07.11.2017

It is first time I visited Nandankanan zoo and found it with amazing diversity and display. This zoo has a very high name for its quality throughout the India and is rightly so because a very meticulous planning and implementation of the same has been done to provide best of experience to the visitors. My sincere appreciation and thanks to everyone involved. I thank PCCF, WL & CWLW and Nandankanan authorities to provide an opportunity to stay in TRH which is in a very scenic place. Thank to everyone.

Pradeep Vyas
Ex-PCCF, WL & CWLW, Best Bengal
Member, PSC, West Bengal
22.11.2017

Visited Nandankanan Biological Park. It is really not only well managed but with highest quality of commandment of staff. Entry fee is really very very low. It is no doubt to cater public at large and serve the purpose of awareness among masses. It is suggested that with some added services, fee may be increased to high end tourist (person who can pay but have shortage of time in case of safari). Story of Nandankanan and his family Bahubali and Kundan have appealed me highly. It has to be brought on national map along with story of Kanan so that it will be Nandankanan. In Ranthambore Tiger Reserve, with half day and full day safari, we have earned revenue of 23 crore in a year (manifold of earlier year). Thanks to the forest department of Orissa for high degree of cooperation shown to me.

A.K. Goel
PCCF, HoFF, Rajasthan
25.11.2017

It was a pleasure & privilege to visit Nandankanan today. I think it is my duty to compliment the officers and staff of the zoological park who have done an excellent job to maintain the scenic and natural beauty of the park while maintaining the good health of the animals and birds. I was in particular, very impressed to learn about the inbreeding programme being conducted at this park. I wish the park and all those associated with it all success in their future endeavors to increase the variety of flora, fauna and animals in the park. Best wishes & thank you Mr. M.K. Panda.

Ajaneesh Kumar
Joint Secretary, MEA, Govt. of India
28.11.2017

Visited the Nandankanan Biological Park for the first time and with family. Could see the park both from the point of view of a professional as well as a common visitor in the family members. I must say that the park is a very enriching experience for a visitor and a great resource to win friends for the forest and wildlife among masses. The diversity of experience here is unique from the point of view of a professional. I must say that the commitment of the staff is clearly reflected in the management and creation of a great experience for the visitor. I also liked the signage created by the Education Officer Mr. Milan Panda which are eye-catching and informative both. Thank you Nandankanan.

Shiv Pal Singh, IFS, CCF (UP)
Director, M/o Housing & Urban Affairs,
Govt. of India

It was great moments of visiting N.F.Z.P after a long gap as a senior citizen with my granddaughter and family. No. of changes are taken place for the convenience and facility of visitors. Always a great and beautiful place with wild sceneries. I was happy to see the behaviour and acts of officials, staff and animal keepers. My best wishes to all of them. It was a great time to have been escorted and explained by Mr. Purohit, always a field expert.

Vinod Kumar, IFS
Former Director
14.12.2017

One of the most beautiful places I have seen so far. Very well maintained and good variety of flora and fauna. Congratulation to the entire team.

R. Vineet Krishna, IAS
MD, OMC
15.12.2017

We the team from department of forest and park services, Bhutan lead by Mr. Tshering Tazu, IFS would like to thank the zoo management for giving us the opportunity to visit the zoo. The zoo officer who guided us for the visit was excellent person with full of zoo knowledge. Overall we had very wonderful visit and most of us could see wild animals which are not found in our country. Great job. Big applause to the zoo management.

Singye Wawgchuk
Department of Forest and Park Services, Bhutan
20.12.2017

It has been an amazing experience to witness stream of people moving to & fro in and around the zoo. Being the first day of the year 2018 the entire scene was flooded by visitors. I am really impressed with the kind of arrangement at various sectors of the zoo where different animals are housed. Best wishes to the staff who have taken

the responsibility for upkeep of this sanctuary.

His Excellency Dr. S.C. Jamir,
Governor of Odisha
01.01.2018

Impressed. The walk in bird enclosure is a great idea. Black tiger is a real rarity. Zoo very well maintained. Evolution garden is very impressive. Best wishes.

Punati Sridhar
PCCF(WL) Karnataka
07.01.2018

Excellent maintained zoo and botanical garden. The natural environment of the zoo is its beauty and asset. Congrats to team Nandankanan for all efforts to maintain tradition of the zoo. Excellence in management, led by Mr. Acharya and his team of

Mr. Jayant, Mr. Anjan, Dr. Sahu, Dr. Sarat, Dr. Mahaptra, Mr. Das and Mr. Milan and others. CBP by Sri Rajesh is also progressing well.

Dr. D.N. Singh, IFS
Member Secretary
Central Zoo Authority, New Delhi
28.02.2018

Nandankanan is one of the most attractive zoological park in the country. They have well preserved the wildlife. Only thing they need to do is to develop more greenery and made it a lush green by ensuring better water management and creating water bodies within the cages. It was great experience. All praises for forest department.

Rajeev Shukla, MP
Former Minister, Govt. of India
Chairman, IPL
29.03.2018



VETERINARY CARE

Nandankanan Biological Park has always given priority for highest standards of animal husbandry and veterinary care. Monitoring of animal health starts from the moment of its birth/arrival at the zoo. Prevention of disease/ailment is the main motto of the health program of Nandankanan.

A dedicated veterinary hospital is located inside the park. Three full time veterinary surgeons are providing veterinary services to the captive animals and birds with specialist support from the College of Veterinary Science & Animal Husbandry (C.V.Sc & A.H) Bhubaneswar and input from an array of experts. A five member 'Technical Committee' constituted by Government of Odisha regularly monitor and review the health care and related matters. A close liaison is maintained with the C.V.Sc & A.H., Bhubaneswar and the services of the 'Health Committee' from C.V.Sc & A.H are requisitioned in case of emergency. A strict protocol for vaccination, deworming and prophylactic chemotherapy is meticulously followed to prevent diseases.





INFRASTRUCTURE AT ZOO HOSPITAL

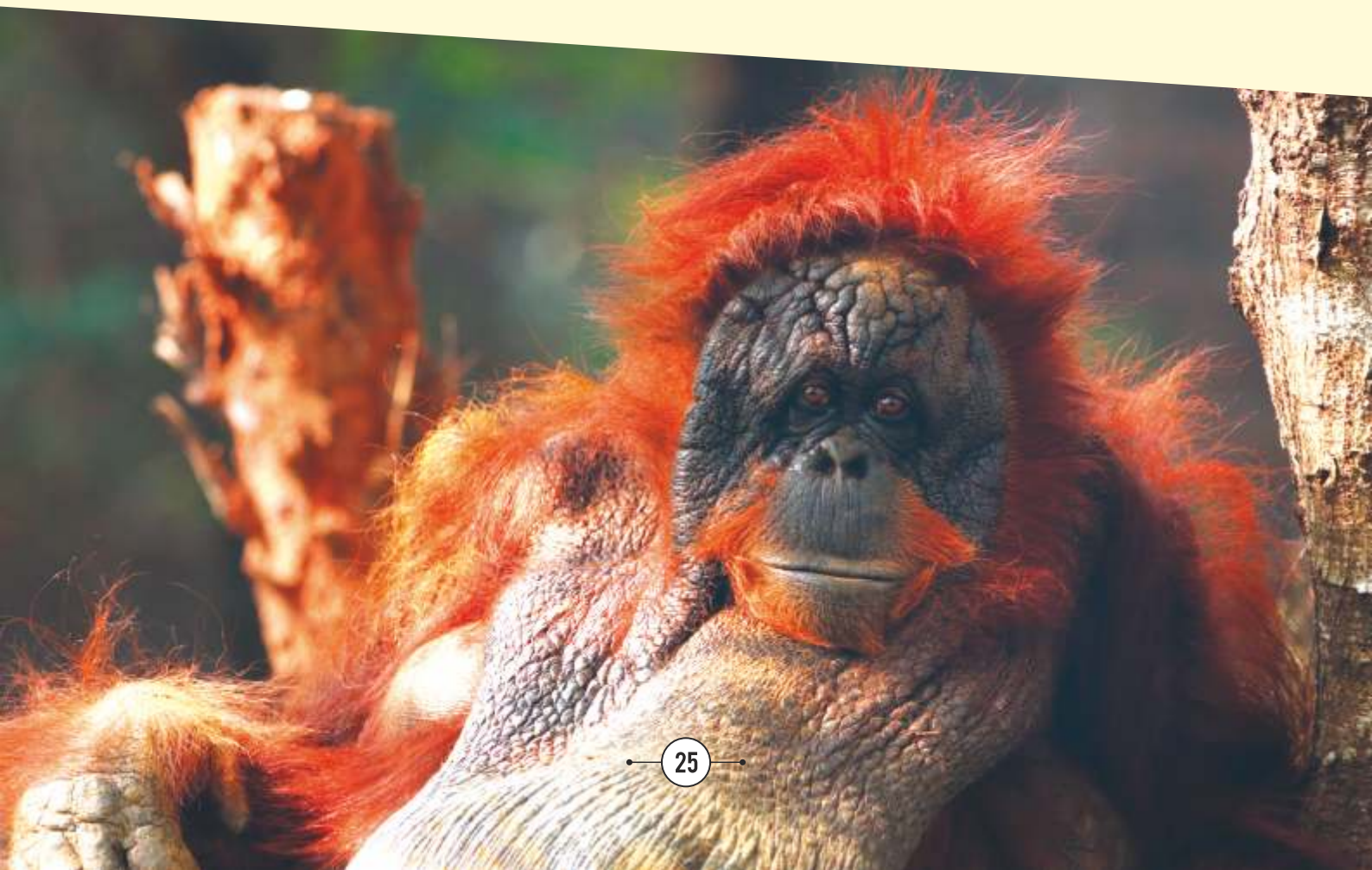
The Zoo Hospital is well equipped with the following infrastructures.

- A well equipped operation theatre backed by a generator, oxygen supply gadget and an x-ray unit.
- A spacious isolation ward to house the sick and injured animals for treatment.
- A quarantine ward to house the newly acquired animals and sick animals suspected for contagious diseases.
- A microbiological laboratory to carry out the cultural tests and antibiotic sensitivity tests of different bio-samples for easy diagnosis and effective treatment of different ailing animals.
- An incubation unit to assist the incubation of eggs of exotic and indigenous species of birds.
- A fully fledged anti-depredation unit equipped with all necessary equipments and drugs for chemical immobilization is operating from the Nandankanan Biological Park which meets the emergency needs of the entire state.

COLLABORATION WITH ODISHA VETERINARY COLLEGE:

A MoU is signed with the College of Veterinary Science & Animal Husbandry (C.V.Sc & A.H), Bhubaneswar for captive use of the "Centre for Wildlife Health". The centre is equipped with onsite ultra-sound and X-ray facility backed by a state of the art clinical laboratory.

The 'Centre for Wildlife Health' was initially set up in the Veterinary College, Odisha University of Agriculture and Technology, Bhubaneswar as a regional centre with the financial assistance from the Central Zoo Authority, New Delhi. It was renamed as 'Centre for Wildlife Health' since April 2007 subsequent upon the bipartite agreement signed between the Forest Department, Government of Odisha and Odisha University of Agriculture and Technology, Bhubaneswar. The centre received an amount of Rs 43 lakhs during 2017-18 from Nandankanan for upgradation of facility as well as to meet the recurring expenses. The prime objective of the centre is to extend diagnostic facilities and advanced medical care to the captive animals and birds of the Nandankanan Zoological Park. The centre is well equipped to carry out haematobiochemical, bacteriological, parasitological and histo-pathological examinations.



Technical Committee:

A Technical Committee is constituted in 19.09.2000 by Government of Odisha with following members to advise the zoo authority on healthcare and related technical matters.

Members:

- Dr S. K. Roy, Retd. Prof. & HOD, Dept. Of Medicine, Orissa, Veterinary college, OUAT- Chairman
- Dr J.N. Mohanty, Retd. Prof. Surgery, Orissa Veterinary College, OUAT-Member
- Sri Sudhakar Mohapatra, IFS (Retd) (Former Chief Wildlife Warden, Odisha)-Member
- Dr L.N. Acharjyo, Veterinarian (Retd), At- MIG-7, Bermunda Housing Board Colony, Bhubaneswar-Member
- Director, Nandankanan Zoological Park, Bhubaneswar-Convenor

Date on which Technical Committee meeting was held during the year: 23.08.2017.

Health Committee:

Health Committee was constituted with experts from Medicine, Pathology, Surgery from CVSc & AH, OUAT on 21.08.2008 (date of MoU).

Members of Health Committee:

1. Dr N. Sahoo, Prof. Preventive Medicine, CVSc & AH, OUAT, Co-ordinator
2. Dr I. Nath, Prof. Surgery, CVSc & AH, OUAT, Co-coordinator
3. Dr S.K. Panda, Prof. Pathology, CVSc & AH, OUAT, Co-coordinator

Dates on which meetings held during the year: 03.04.2017, 13.04.2017, 20.05.2017, 29.05.2017, 04.08.2017, 04.10.2017, 25.11.2017, 14.01.2018, 26.01.2018, 28.01.2018, 12.02.2018 & 16.03.2018.

PROPHYLACTIC PROTOCOL

A set of protocol are meticulously followed as a prophylactic measure against some of the devastating diseases. In addition to this disinfection and deworming protocols are followed for management of the ecto and endo parasitic infestations in captive animals. Following prophylactic protocol is observed in the park:

- Annual vaccination to Tigers, Lions, Leopards, Leopard cat, Fishing cat and Jungle cats against Feline Panleucopenia.
- Annual vaccination of Jackal and Hyena with multivalent vaccine.
- Administration of Triquin as a prophylactic measure against Trypanosomiasis to Tigers, Lions and Leopards at 4 months interval.
- Vaccination of elephants against Haemorrhagic Septicemia(HS), Black Quarter (BQ), Tetanus, Rabies, Anthrax and Foot & Mouth Disease. Vaccination of four horned antelopes with BQ and HS vaccines.
- Body spray with Cypermethrin/Deltamethrin at 2 months interval against ticks, flies and other vectors in case of big cats.
- Kohrsolin-TH sprays in enclosures at two months intervals.
- Screening of the fecal samples of all Nandankanan Biological Park inmates at 3 months interval and deworming as required.
- Periodical screening of blood samples.

Intervention by the veterinary wing of the zoo.

Sl. No.	Activities	Number of cases dealt
1	Cases treated	8615
2	Surgery performed	44
3	Deworming carried out	5224
4	Chemical immobilization	170
5	Screening of blood smears	66
6	Bacteriological examination	16
7	Faecal Sample examination	744

Vaccination:

Sl. No.	Vaccination/chemoprophylaxis	Number of cases dealt
1	BioFel PCHR (against Feline Panleucopenia)	56
2	Triovac (against HS, BQ & FMD)	3
3	H.S.Vaccine	14
4	Triquin administration	134
5	Anti Rabies Vaccine	7
6	Tetanus Toxoid	14
7	Multivalent Vaccine (MegaVac)	15
8	B.Q. Vaccine	22
9	Anthrax Vaccine	7
10	F.M.D. Vaccine	7

SIGNIFICANT ACHIEVEMENTS IN HEALTH CARE

1. Hand rearing of a Bonnet macaque baby.

On 24.05.2017, a female Bonnet macaque that has delivered a baby 7 days back, found lying in lateral recumbency on the floor of its retiring cell with stiffness of all four limbs, locking of jaws and unable to move. The baby macaque was sitting aside its mother helplessly. The mother macaque was immediately shifted to Isolation Ward of zoo hospital for treatment and the baby macaque was taken to hand rearing centre. It was little dehydrated and weak. A properly disinfected covered wooden room with heating element fitted inside was selected for rearing of the baby. A bed made up of gauze was prepared to provide it warmth simulating its mother's lap. It was fed with human baby milk formula. Intensive health care and high standard managerial practices saved the life of the baby. Presently the baby has already been released to the enclosure of Bonnet Macaque.

2. Treatment of a rescued Indian pangolin.

On 13.06.2017, one female Indian Pangolin was received at Nandankanan for treatment and rehabilitation. The said pangolin was rescued from Hindol Range of Dhenkanal Forest Division. At the time of receipt, it was in lateral recumbency state, dehydrated, anemic and weak, heavily infested with ticks. The ticks were removed manually, fluid was administered with other supportive therapy. The Pangolin was kept under intensive care with round the clock monitoring of health status. Gradually it started taking feed and regained its normal health.

3. Hand rearing of a elephant calf.

On 03.11.2017, one female elephant calf aged about 5 months was received at Nandankanan for hand rearing and rehabilitation. It was rescued from Nirakarpur area, abandoned by the herd in injured condition, limping and dehydrated. With the past experience of success and failures in elephant calf rearing, the challenging task to save the life of elephant calf was taken up. Appropriate oral rehydration with electrolytes, timely feeding of human baby food milk formula, treatment with day to day intensive care and improved managerial practices led to improved health condition of the calf. Presently the calf has started taking grasses and is doing well.

4. Management of population growth in spotted deer by vasectomy.

As a measure to control population growth in spotted deer at enclosure of Nandankanan Zoological Park, vasectomy amongst male deer was planned. A total of 44 male spotted deer were successfully vasectomised during the year 2017-18. The male spotted deer were immobilized, operated and ear tagged as a measure for identification. As a result a significant reduction in birth rate is observed.

5. Hand rearing of a tiger cub.

The tigress Ankita delivered two tiger cubs on 13.01.2018 out of which one cub died within 18 hrs of birth. It is observed through CCTV that the tigress is not showing any interest in the other cub. After 12 hours of



observation, the cub was rescued for hand rearing. The day old tiger cub was weak and dehydrated at the time of rescue. After routine health examination and morphometry, the cub was shifted to hand rearing centre. Proper hygienic measures were taken in the rearing room, strict sterilization of the feeding bottles and utensils was ensured. It was fed with Royal Canin baby dog milk formula as per its reconstitution recommendation. A multivitamin preparation along with calcium suspension was added to the milk. Carminative drugs and lactobacillus preparations were added whenever necessary. In two months, it started taking minced chicken meat. Presently it is taking buffalo meat and in normal health condition.

6. Successful management of dystocia in a Manipuri deer.

Dystocia due to posterior presentation is not uncommon in ruminants. One such case was observed in Manipuri deer at Nandankanan Zoological Park on 15.01.2018. A six year old female was observed in restlessness with abdominal straining and repeatedly sitting down and getting up. As these animals are very timid, observations were made through binoculars. On observation the water bag was found ruptured and a pair of hooves of hind limbs were seen to outside with discharges from vagina. The situation compelled to immobilise the animal. After immobilization a live male fetus was removed along with fetal membranes by gentle traction and manual correction. The uterus was cleaned and antibiotics were administered intra uterine and parenterally. Analgesics, multivitamins and anti-histaminics were administered along with fluid. The reversal of anaesthesia was successful and the dam recovered uneventfully.

7. Management of a compound carpometacarpal fracture in a lesser adjutant stork.

On 10.03.2018, an adult male lesser adjutant stork was observed inside its enclosure with flexed right wing, dull and anorectic. Upon physical examination of the right wing, the sharp edge of bone was found protruding outside breaching skin. Radiographic examination of the affected wing revealed compound fracture of right carpometacarpal bone at the mid shaft. Fracture ends of the bone were immobilized using 'external coaptation bandage technique'. Treatment of the bird was continued keeping it confined to a small cage to restrict its movement. Radiographic images, after 15 days of bandage showed considerable callus formation at the fracture site. The bird was successfully recovered from fracture and released to its enclosure after one month and the bird was seen using its wings comfortably.

8. Artificial incubation of bird eggs.

It was observed that the hatching rate of bird allowed to incubate naturally. In a bid to pea fowls and jungle fowls fully automatic egg Provisions were made for uninterrupted power A total of 32 eggs hatched out successfully golden pheasants, 2 Lady Amherst's Indian pea fowls.

eggs is quite low when the eggs are capitalize the breeding in pheasants, Incubator cum Hatcher was procured. supply and round the clock monitoring. which include 17 silver pheasants, 6 pheasants, 4 jungle fowls and 3



**ANNUAL REPORT ON BIRTH OF CAPTIVE ANIMALS AT NANDANKANAN ZOOLOGICAL PARK
(FROM 01.04.2017 TO 31.03.2018)**

SL NO	DATE	NAME OF SPECIES	SEX	SL NO	DATE	NAME OF SPECIES	SEX
1	01.04.17	Jackal	1U/S	43	03.11.2017	Gaur	1F
2	02.04.17	Black buck	1U/S	44	05.11.2017	Black buck	1U/S
3	07.04.17	Common palm civet	2U/S	45	07.11.2017	Swainsons lorikeet	2U/S
4	09.04.17	Common palm civet	1U/S	46	15.11.2017	Spotted deer	3M+3F
5	14.04.17	Black buck	1U/S	47	04.12.2017	Manipuri deer	1U/S
6	20.04.17	Chimpanzee	1F	48	08.12.2017	Manipuri deer	1U/S
7	23.04.17	Barn owl	2U/S	49	18.12.2017	Sloth bear	1U/S
8	29.04.17	Spotted deer	3M+1F	50	23.12.2017	Spotted deer	3M
9	03.05.17	Bonnet macaque	1U/S	51	30.12.2017	Spotted deer	1M+1F
10	03.05.17	Common palm civet	3U/S	52	31.12.2017	Indian pangolin	1U/S
11	12.05.17	Mugger crocodile	4U/S	53	01.1.2018	Spotted deer	3U/S
12	15.05.17	Mandarin duck	2U/S	54	05.1.2018	Spotted deer	1M+2F
13	16.05.17	Common palm civet	2U/S	55	09.1.2018	Black buck	2U/S
14	23.05.17	Spotted deer	2M+2F	56	10.1.2018	Black buck	1U/S
15	06.6.2017	Spotted deer	2M+3F	57	12.1.2018	Normal colour tiger	2U/S
16	16.6.2017	Silver pheasant	9No.	58	19.1.2018	Spotted deer	3U/S
17	16.6.2017	Lady Amherst pheasant	2No.	59	23.1.2018	Spotted deer	5U/S
18	16.6.2017	Red jungle fowl	2No.	60	25.1.2018	Spotted deer	7U/S
19	16.6.2017	Silver pheasant	5No.	61	30.1.2018	Mouse deer	1U/S
20	16.6.2017	Golden pheasant	4No.	62	31.1.2018	Night heron	5U/S
21	16.6.2017	Red jungle fowl	2No.	63	31.1.2018	Painted stork	1U/S
22	16.6.2017	Silver pheasant	3No.	64	31.1.2018	White ibis	15U/S
23	16.6.2017	Golden pheasant	2No.	65	07.2.2018	Spotted deer	1M+3F
24	16.6.2017	Indian peafowl	3No.	66	15.2.2018	Spotted deer	1M+5F
25	24.6.2017	Spotted deer	2M+1F	67	18.2.2018	Spotted deer	3M+4F
26	28.7.2017	Indian pangolin	1U/S	68	19.2.2018	Spotted deer	5U/S
27	27.8.2017	Spotted deer	3M	69	22.02.18	Spotted deer	3M+2F
28	01.9.2017	Spotted deer	4U/S	70	25.02.2018	Spotted deer	3M+4F
29	08.9.2017	Spotted deer	2M+1F	71	03.03.2018	Spotted deer	3M+2F
30	23.9.2017	Spotted deer	3M+1F	72	04.03.2018	Spotted deer	4U/S
31	23.9.2017	Chimpanzee	1F	73	05.03.2018	Spotted deer	5U/S
32	23.9.2017	Hippopotamus	1U/S	74	16.03.2018	Budgerigar	15US
33	30.9.2017	Jungle cat	2U/S	75	17.03.2018	Zebra Finch	12US
34	30.9.2017	Jandaya conure	2U/S	76	17.03.2018	Java Sparrow	5US
35	30.9.2017	Sun conure	5U/S	77	20.03.2018	White ibis	8US
36	30.9.2017	Gharial	20U/S	78	20.03.2018	Night heron	5US
37	03.10.2017	White ibis	5U/S	79	26.03.2018	Alexandrine parakeet	1US
38	03.10.2017	Cockatiel	4U/S	80	26.03.2018	Blue faced lorikeet	1US
39	03.10.2017	Spotted deer	1M+2F	81	30.03.2018	Spotted deer	6US
40	08.10.2017	Sambar	1F	82	30.03.2018	Hog deer	5US
41	10.10.2017	Spotted deer	3M+2F	83	30.03.2018	Spotted deer	10US
42	25.10.2017	Spotted deer	6M+5F	84	31.03.2018	Spotted deer	15US

ABSTRACT

	MAMMAL	BIRD	REPTILE	AMPHIBIAN	TOTAL
BIRTH	196	122	24	0	342

ANNUAL REPORT ON DEATH OF CAPTIVE ANIMALS AT NANDANKANAN ZOOLOGICAL PARK
(From 01.04.2017 to 31.03.2018)

Sl. No.	Animal Name	Sex	Date of Death	Reason of Death as per the Post-mortem report
MAMMALS				
1	Jackal cub	M	22.04.17	Death due to traumatic injury and hypovolumic shock
2	Hybrid lion	M	25.04.17	Multiple cysts in the liver associated with old age
3	Nilgai	F	30.04.17	Tumor in the liver associated with old age
4	Hog deer	M	13.05.17	Pneumonia
5	Hippopotamus	F	20.05.17	Injury and jaundice
6	Grant's Zebra	M	30.05.17	Shock associated with internal haemorrhage, blood loss and enteritis.
7	Jackal	M	05.07.17	Infighting and hypovolumic shock
8	Sambar	M	03.08.17	Acute pneumonia
9	White tiger	F	12.08.17	Hepatic tumor and rupture with haemoperitoneum associated with old age
10	Sloth bear	F	31.08.17	Chronic hepatitis with cholecystitis and ascites
11	Grant's Zebra	M	25.09.17	Toxaemia associated with muscle haemorrhage, pneumonia and enteritis suspected for mixed clostridial and pasteurella infection.
12	Bonnet macaque	M	03.10.17	Infighting
13	Sloth bear	M	10.10.17	Tuberculosis
14	Jackal	F	07.11.17	Haemorrhagic enteritis with debility
15	Hog deer	M	16.11.17	Infighting
16	Spotted deer	M	17.11.17	Infighting
17	Jungle cat	M	01.12.17	Anaemia and haemorrhagic enteritis
18	Jungle cat	F	02.12.17	Anaemia and haemorrhagic enteritis
19	Leopard	M	04.12.17	Stomach rupture associated with peritonitis and ascites.
20	Spotted deer	M	09.12.17	Suppurative pneumonia
21	Tiger	F	20.12.17	Pulmonary collapse, haemopericardium associated with debility and old age.
22	Indian Pangolin	M	02.01.18	Shock
23	Tiger cub	M	13.01.18	Multiple injury, lungs rupture and thoracic bleeding.
24	Bonnet macaque	M	20.01.18	Old age
25	Mouse deer	F	01.02.18	Prolapse of part of rumen with retention of urine in U.B and internal bleeding to peritoneal cavity.
26	Mouse deer	F	05.02.18	Enteritis and retention of urine
27	Common palm civet	M	19.02.18	Infighting
28	Sambar	M	01.03.18	Acute Pneumonia
29	Spotted deer	F	05.03.18	Old age
30	Spotted deer	M	11.03.18	Infighting
31	Spotted deer	M	12.03.18	Tuberculosis
32	Spotted deer	M	15.03.18	Tuberculosis
33	Jungle cat	M	15.03.18	Enteritis
34	Spotted deer	M	28.03.18	Infighting
35	Hippopotamus	M	29.03.18	Septicemia associated with infighting injuries.

BIRDS

1	Painted stork	F	23.04.17	Hepatitis and nephritis
2	Indian Peafowl	F	30.04.17	Old age with pneumonia
3	Black Kite	M	05.05.17	Impaction and debility
4	Violet turaco	M	20.05.17	Enteritis and generalized congestion with dehydration
5	Mute swan	M	13.06.17	Hepatitis and enteritis
6	Brahminy kite	F	20.06.17	Pneumonia associated with old age
7	Reev's pheasant	F	07.07.17	Pneumonia
8	Emu	M	21.07.17	Haemorrhagic myositis and septicemia
9	Blue & yellow macaw	M	26.07.17	Fatty liver haemorrhagic syndrome
10	Red jungle fowl	M	01.08.17	Debility, anemia & enteritis
11	Cockatiel	M	12.08.17	Enteritis & Hepatitis
12	Cockatiel	F	13.08.17	Enteritis
13	Ring necked parakeet, albino	F	27.08.17	Enteritis
14	Ring necked parakeet, lutino	F	29.08.17	Enteritis
15	Pineapple conure	F	31.08.17	Tape worm & enteritis
16	Mandarin duck	F	04.09.17	Enteritis and Hepatitis
17	Ring necked parakeet, lutino	F	14.10.17	Hepatitis and enteritis
18	Ring necked parakeet, lutino	M	20.10.17	Haemorrhagic enteritis.
19	Grey hornbill	M	25.10.17	Pneumonia
20/21	Canary	2F	18.11.17	Predator bite
22	Eastern Rosella	F	19.11.17	Pneumonia
23	Brown throated conure	M	20.11.17	Debility associated with old age
24/25	Ring necked dove	2M	21.11.17	Enteritis.
26	Sun conure	F	26.11.17	Hepatitis and enteritis
27	Pineapple conure	M	05.12.17	Hepatitis and nephritis
28	Ring necked parakeet, Lutino	F	10.12.17	Necrotic hepatitis with peri-hepatitis and enteritis
29	Barn owl	M	15.12.17	Infighting
30/31	Eastern Rosella	1M, 1F	30.01.18	Parasitic enteritis
32	Mandarin duck	M	06.2.18	Suppurative pneumonitis and air sacculitis
33	Indian Peafowl	F	17.02.18	Predator bite
34	Jandaya conure	M	21.02.18	Enteritis
35	Silver pheasant	F	11.03.18	Ingluvitis and hepatitis





REPTILES

1	Gharial yearling	M	29.12.17	Congenital spinal compression at the cervical region associated with debility
2	Green Iguana	M	16.01.18	Impaction
3	Reticulated python	M	23.02.18	Old age
4	Gharial crocodile	F	24.02.18	Cause of death could not be ascertained due to advanced putrefaction of the carcass

ABSTRACT

Mammals	Birds	Reptiles	Total
35	35	04	74

**BIRTH AND DEATH OF CAPTIVE ANIMALS FOR THE LAST FIVE YEARS
TOTAL STOCK POSITION FROM 01.04.2013 TO 31.03.2018**

2013- 14

Types	Stock as on 01.04.2013	Birth	Acquisition/ procurement	Death	Disposal	Stock as on 31.03.2014
Mammals	840	48	16	26	03	875
Birds	1061	69	59	06	08	1175
Reptiles	252	07	05	05	09	250
Amphibians	-	-	21	-	-	21
Total	2153	124	101	37	20	2321

2014-15

Types	Stock as on 01.04.2014	Birth	Acquisition/ procurement	Death	Disposal	Stock as on 31.03.2015
Mammals	875	78	6	27	15	917
Birds	1175	79	141	16	04	1375
Reptiles	250	08	04	10	10	242
Amphibians	21	0	0	0	0	21
Total	2321	165	151	53	29	2555

2015-16

Types	Stock as on 01.04.2015	Birth	Acquisition	Death	Disposal	Stock as on 31.03.2016
Mammals	917	74	18	62	11	936
Birds	1375	116	13	27	4	1473
Reptiles	242	16	0	11	8	239
Amphibians	21	0	0	0	0	21
Total	2555	206	31	100	23	2669



2016-17

Types	Stock as on 01.04.2016	Birth	Acquisition	Death	Disposal	Stock as on 31.03.2017
Mammals	936	247	27	30	5	1175
Birds	1473	68	65	18	42	1546
Reptiles	239	13	18	1	7	262
Amphibians	21	0	0	0	0	21
Total	2669	328	110	49	54	3004

2017-18

Types	Stock as on 01.04.2017	Birth	Acquisition	Death	Disposal	Stock as on 31.03.2018
Mammals	1175	191	6	35	02	1335
Birds	1546	122	34	35	14	1653
Reptiles	262	24	10	04	03	289
Amphibians	21	0	0	0	0	21
Total	3004	342	50	74	19	3303

**DEATH OF CAPTIVE ANIMALS IN
NANDANKANAN ZOOLOGICAL PARK DURING THE PAST FIVE YEARS**

Year	Total stock	Number of deaths					percentage
	As on 31st March	Mammals	Birds	Reptiles	Amphibians	Total	
2013-14	2321	26	06	05	-	37	1.57%
2014-15	2555	27	16	10	0	53	2.03%
2015-16	2669	62	27	11	0	100	3.61%
2016-17	3004	30	18	01	0	49	1.62%
2017-18	3303	35	35	04	0	74	2.24%



ENSURING QUALITY FEED:

Supply of well balanced quality food is crucial for the sound health and reproduction of the captive animals in a zoo. Keeping this in mind, supply of nutritious, healthy and hygienic food to the animals and birds is an important mandate of the Nandankanan Zoological Park. The Park has a Food Distribution Center with a zoo kitchen to cater to the needs of the captive animals and birds. A separate Store Range is headed by a Range Officer looks after the supply of feed materials. To achieve the quality supply of feed, a captive slaughter house was established within the Park. A fodder farm has also been developed to achieve self sufficiency in fodder production to meet the nutritional requirements of the herbivores. Eighty four various feed items are being procured daily through an annual tender/departmental procurement process. The Tender Committee headed by the Chief Wildlife Warden approves the rate for procurement of feed items.

- **Live Feed Rearing Centre**

The centre was established in July 2015 to ensure regular supply of hygienic live feed to the zoo animals. The centre is successfully breeding Wistar (albino) rat, BALB/c (albino), mice, Guinea pig, snails,

mealworm and hatching poultry chicks to fulfil daily requirement of live feed required for our the zoo animals.

- **Establishment of captive slaughter house**

As a step forward the park has set up a captive slaughter house, first of its kind, inside the park to ensure regular supply of fresh and hygienically processed buffalo meat for the carnivores. Routine inspection includes ante and postmortem examinations of animals and meat respectively. Post mortem examination is supported by both gross and microscopic examination of meat and vital organs. As a result, food borne health complications are being successfully kept at bay. The daily requirement of buffalo meat to feed the carnivore population in the park is about 350 Kg.

- **Captive fodder farm**

Different types of grasses and fodder are given to the herbivores from the captive fodder farm of the zoo spread over an area of 33 Acres. Seasonal/Periodical organic farming of different grass/fodder is carried out in the farm to ensure supply of fresh and essential fodder to the herbivores in the zoo (daily requirement being about 3200 Kg). The month wise production of different grass and fodder during 2017-18 is as follows.



**Month-wise production of fodder from the captive fodder farm
(in quintal) for the year 2017-18**

Month	Para grass	Hybrid Napier (NB-21) grass	Common grass	Sorghum grass	Oat grass	Cowpea	Humidcola	Total
04/2017	230.175	26.70	512.445	18.00	64.00	86.00	6.00	943.32
05/2017	311.23	131.75	588.28	-	-	40.00	6.20	1077.46
06/2017	298.50	127.50	506.40	-	-	90.00	6.00	1028.40
07/2017	295.83	131.75	532.28	12.00	-	84.00	6.20	1062.06
08/2017	307.83	131.75	616.28	-	-	-	6.20	1062.06
09/2017	297.10	127.50	597.20	-	-	-	5.20	1027.00
10/2017	301.63	131.75	622.48	-	-	-	-	1055.86
11/2017	291.90	127.50	602.40	-	-	-	-	1021.80
12/2017	301.63	131.75	622.48	-	-	-	-	1055.86
01/2018	303.63	131.75	486.48	-	136.00	-	-	1057.86
02/2018	278.04	119.00	346.24		208.00		8.00	959.28
03/2018	303.83	105.75	422.48	26.00	32.00	172.00	-	1062.06
TOTAL	3521.325	1424.45	6455.445	56.00	440.00	472.00	43.80	12413.02

The total production of fodder in the fodder farm during the year 2017-18 was 12413.02 quintals. The cost of production was calculated to be Rs. 1.60/Kg of fodder.

- **Feed distribution centre**

Feed items received from various sources are screened by the Range Officer (Store), Assistant Director and the Zoo Vets. All the green vegetables and other perishable feed items are thoroughly cleaned and disinfected before distribution. The feed items received are weighed and distributed in prescribed quantities to various animal houses. 100 feed items are collected and supplied daily to meet the nutritional requirements of the 156 species of mammals, birds and reptiles. These include very specific items such as snail without shell, tree termite egg, live grass hoppers and the like. The feed items are procured from various suppliers through open tenders and the price is approved by the Purchase Committee constituted by the Govt.

- **Seasonal feed**

To supplement the dietary requirements, some seasonal fruits and vegetables are provided to the animals considering their liking and acceptance like water melon, sugarcane, green coconut water, apple, jamun, custard apple, green pea, ripe papaya, amla, guava and orange.

- **Chlorination plant**

The zoological park has chlorination plant to ensure the supply of purified drinking water and thereby preventing the spread of waterborne diseases.

- **Vermicompost unit**

The park has a vermicompost unit located inside the fodder farm where the organic waste of the zoo is being converted to natural plant fertilizer using earthworms. Another unit of vermicompost was added during the financial year.

LAWNS AND GARDENS

Beautiful gardens, lawns and meadows have been established at different strategic locations in the zoo to provide resting places for the visitors. Facilities like sit-outs, drinking water and toilets are also provided near such places. Lawns with gardens in six locations and 3 meadows are available inside the Zoological Park. The gardens are maintained with seasonal flowers round the year and are well appreciated by the visitors.



RESEARCH EDUCATION &



RESEARCH

Displaying its long-term commitment to research, Nandankanan Biological Park supported a number of research projects to assess biodiversity conservation, wildlife management, animal health issues and management of captive animals.

The project entitled '**Ecto-endo parasites of captive animals of Nandankanan Zoological Park**' was successfully completed which was jointly operated by the Orissa Veterinary College, Bhubaneswar and Nandankanan Zoological Park, Govt. of Odisha. The results of the study revealed the prevalence of helminthic infection, either single or mixed, in large carnivores. In the other hand, the administration of different anti helminthic drugs have been tested successfully and found effective in treatment of the infected animals.

(a) Indian Pangolin Conservation Breeding Programme: The research on conservation breeding of Indian pangolin is actively going on in the established 'Indian pangolin conservation breeding centre'. Monitoring through the infrared sensitive CCTV cameras unfolds the secrets of the life of the pangolins. The centre is successfully breeding Indian pangolins in captivity. Besides the centre is also focusing to standardize hormonal assay methodology of fecal steroid metabolites to better understand reproductive aspect of these endangered species.

(b) Conservation Breeding of Long-billed vultures: A vulture conservation breeding centre has been constructed during 2011-12 with all basic facilities in off exhibit area with financial support from CZA. The park will receive 12 long billed vultures from Gandhi Zoological Park, Gwalior towards the end of this year.

Publications:

The research studies carried out during the year mostly focused on standardization of artificial incubation techniques for birds and reptiles, standardization of hand rearing protocols for baby animals, management

of health care related issues, behavioural studies on maternal behaviour of Indian pangolins, analysis effect of inbreeding on captive tigers, hormonal studies to determine reproductive status and stress in wild animals. Some of the studies are published in national and international journals which are mentioned below.

1. Sahu, S.K., Sahoo, N. and Mohapatra, R.K. (2018) Management of haemorrhagic enteritis in a striped hyena (*Hyaena hyaena*): a case report. *Int J Avian & Wildlife Biol.* 3(1):65-66.
2. Chichilichi, B., Pradhan, C. R., Sahoo, N., Panda, M. R., Mishra, S. K., Behera, K., & Das, A. (2018). Fecal cortisol as an indicator of stress in free-ranging and captive Asian elephants of Odisha. *The Pharma innovation.* 7(4): 1137-1140.
3. Kharate, A., Sahu, S. K. , Panda, S. K. , Sahoo, N. , Panda, H. K. (2018). Prevalence, Isolation and Identification of Feline Panleukopaenia Virus from Wild Felids in Nandankanan Zoo, Odisha. *International Journal of Animal and Veterinary Sciences*, 12(1), 701.
4. Sahu, S.K., Panda, S.K. and Mohapatra, R.K. (2017) Gout in Egyptian vulture (*Neophron percnopterus*): a case report. *Int J Avian & Wildlife Biol.* 2(2):46-48.
5. Mishra, S.P., Mishra, C., Nayak, G., Mishra, P., Sahoo, N., Sahu, S.K. (2017) Effect of inbreeding on mortality of captive tiger. *Explor Anim Med Res* 7(1): 69-73.
6. Das, S., Dehuri, M., Panda, M.R. Sahoo.M., Mohanty B. and Sahu, SK. (2017) Chemotherapy against gastrointestinal helminths in herbivore safari at Nandankanan Zoological Park, Odisha. *Global Journal of Bio Science and Biotechnology.* 6(3): 556-558.
7. Mishra, S.P., Mishra, C., Nayak,G., Sahoo, N. and Sahu, S.K. (2017) Effect of inbreeding on several fitness traits and disease susceptibility in captive tiger (*Panthera tigris*) population at Nandankanan Zoological Park, Odisha. *International Journal of Livestock Research.* 7(7): 241-250.
8. Nayak, T., Panda, M.R., Mohanty, B.N., Dehuri, M. and Sahu, T. (2017) Record of *Cotylophoron cotylophorum* from necropsy of captive spotted deer (*Axis axis*). *International Journal of Advanced Biological Research.* 7(4):810-812.



ZOO EDUCATION PROGRAM

Around 3.29 million people visit Nandankanan Zoological Park. Such a wide, diverse, varied and regular audience provides an excellent opportunity for education, and an enormous potential to heighten public perception and awareness about the animals and their conservation. Zoos are living institutions, living classrooms, living landscapes. Zoo education is a holistic discipline targeted at zoo visitors, staff and the wider community aiming to promote an understanding of, and concern and respect for biodiversity, animals and the natural world, and encourage action for a sustainable future. In order to have impact, we need to influence as many people as possible. To do this, we need to promise and deliver something relevant and attractive to the wider community. We want visitors to enjoy themselves, and to feel the wonder and affection toward animals. We want to make it easy for visitors to take action during their visit and after they leave our gates. To achieve this education programmes are designed with a different flavor, like celebration of birthday, elephant day, naming of new born, display of signages etc. There is a dedicated zoo education officer in Nandankanan to take care of these activities.

Wildlife Week Celebration

63rd Wildlife Week was celebrated in a grand manner in the zoo from 2nd October, 2017 to 8th October, 2017 with display of banners, educating school children on wildlife conservation. More than 3591 school children had free entry into the Zoological Park during the Wildlife Week. Sit & draw, quiz competitions and signature campaign were organized on the occasion of Wildlife Week celebration among the students of nearby schools.

World Elephant Day celebration

Elephant Day was celebrated at Nandankanan Zoological Park 12th August, 2017 in the presence of Dr. Sandeep Tripathy, IFS, Principal Chief Conservator of Forests (Wildlife) & Chief Wildlife Warden, Odisha, Bhubaneswar. The elephants received a special treat of coconut, banana, sugarcane and a host of their hot favourites. The mahouts were also felicitated in the auspicious occasion for their hard work. A cycle rally was organized by the Chandaka Wildlife Division from Nandankanan to Godibari of Chandaka Wildlife Division to mark the occasion.

Foundation Day celebration

57th Foundation Day of Nandankanan was celebrated on 29.12.2017 in the zoo premises. Sri Suresh Chandra Mohapatra, IAS, Principal Secretary, Forest and Environment Department, Government of Odisha, graced the occasion as the Chief guests and Sri Sidhanta Das, Principal Chief Conservator of Forests & Chief Wildlife Warden, Odisha was the guest of Honour of the ceremony. Annual Report for the year 2016-17, was released on the occasion. The best workers of Nandankanan were rewarded by the Guests. The meeting was attended by school children, visitors, local inhabitants, serving and retired forest officers, zoo staff and media persons.

Celebration of World Wetlands Day

World Wetland Day was celebrated on 2nd February, 2018 on bank of Kanjia lake. More than 60 school students participated in the celebration. A quiz competition was held on the spot and prizes were distributed to the winners. A meeting was organized on the bank of Kanjia lake to mark the celebration which was attended by visitors, staff, school children and representatives from media.

Celebration of World Pangolin Day

The World Pangolin Day, 2018 was celebrated at Nandankanan Zoological Park on third Saturday of February, i.e. 18th February 2018. A drawing competition themed "SAVE PANGOLINS" was organized among school children on this occasion and prizes were distributed to the winners. Besides, a signature campaign themed "I Support Pangolin Conservation" organized during this celebration was supported by many school children, teachers, staff of Nandankanan, zoo guides and visitors by their signature and writing their message for pangolin conservation.

Celebration of World Wildlife Day

The World Wildlife Day was celebrated at Nandankanan Zoological Park on 3rd March 2018 to create awareness among people about current threats to wildlife and conservation efforts to save them. A signature campaign on theme "Listen to young voices" was organized during the celebration.

Celebration of International Tiger Day

International Tiger Day, 2017 was celebrated on 29th July, 2017 at conference hall of Nandankanan zoological park. Mr. Jayant Kumar Das, Deputy

Director, Nandankanan Mr. Kamal Lochan Purohit, Assistant Director, Nandankanan Dr. Anil Kumar Das, Senior Veterinary Officer, Nandankanan and Mr. Michael Peter, WWF-Odisha Chapter was Guest of

Honour. The celebration was attended by school students, teachers, and representatives of Print and Electronic media and staff of Nandankanan.





DATE	PROGRAMME	NUMBER OF PARTICIPANTS
14.05.2017	Orientation tour of FRO trainees from Karnataka Forest Academy, Karnataka	49
19.05.2017	Orientation visit of Forest Guard from FTS, G. Udaygiri	55
24.05.2017	Exposure visit of Bangladesh Forest Officers, Bangladesh	07
06.06.2017	Orientation tour programme of Forester from MFGS, Angul	70
07.06.2017	Orientation visit of Forest Guard from NFTS, Champua	54
20.06.2017	Study tour of B.Sc 1st Year students of Forestry of OUAT, Bhubaneswar	44
15.07.2017	Study tour of B.Sc 2nd Year students of Forestry of OUAT, Bhubaneswar	26
20.07.2017	Orientation visit of Tribal Research Institute officials, Sikkim	26
25.07.2017	Orientation tour of FRO trainees from Gujarat Forest Academy, Gujarat	45
29.07.2017	Observation of International Tiger Day at Nandankanan	> 100
12.08.2017	Celebration of World Elephant Day at Nandankanan	> 200
18.08.017	Orientation tour of OAS Probationers from Gopabandhu Academy of Administration, Bhubaneswar	64
22.08.2017	Orientation tour programme of Forest Guards from MFGS, Angul	44
02.09.2017	Orientation Programme of P.G. Students from Ravenshaw University, Cuttack	15
08.10.2017	Wildlife Week Celebration	> 200
29.10.2017	Exposure visit of P.G. Students from Dept. of Zoology, Utkal University, Bhubaneswar	30
07.11.2017	East India exposure visit of Officer Trainees of SFS Batch, Assam	50
14.11.2017	Orientation tour programme of students of ITBP School, Cuttack	30
16.11.2017	Orientation programme of B.V.Sc students of OUAT, Bhubaneswar (1st Batch)	30
17.11.2017	Orientation programme of B.V.Sc students of OUAT, Bhubaneswar (2nd Batch)	31
14.12.2017	Exposure visit of U.G. Students from Dept. of Zoology, Banki Autonomous College, Banki	34
16.12.2017	Orientation tour programme of Forester from FTS, Ghatkhia	54
18.12.2017	Study tour of Dept. of Forest & Park Service, Royal Govt. of Bhutan, Bhutan	13
30.12.2017	Orientation tour of IFS Probationers, Central Delhi	40
03.01.2018	Exposure visit of P.G. Students from Dept. of Zoology, D. R. Nayapalli College, Bhubaneswar	20
21.01.2018	Orientation visit of Forest Guard from NFTS, Champua	41
30.01.2018	Visit of differently-abled persons from Aurobindo Academy, Cuttack	30
02.02.2018	Celebration of World Wetland Day at Nandankanan	> 100
04.02.2018	Orientation visit of Forest Guard from FTS, G. Udaygiri	44
12.02.2018	Orientation Programme of FRO from CASFOS, Burnihat	33
13- 19.02.2018	Orientation programme on wildlife management for graduate students from Australian Universities	06
17.02.2018	Celebration of World Pangolin Day at Nandankanan	> 100
25.02.2018	Study tour of B.Sc students of Forestry of OUAT, Bhubaneswar	45
10.03.2018	Orientation visit of FRO trainees from Coimbatore, Karnataka	39
17.03.2018	Study tour of B.sc students of Forestry of OUAT, Bhubaneswar	45
19- 25.03.2018	Training of Animal Keepers on "CZA Vision 2030"	29 (from 23 zoo)
28 & 29.03.2018	Training Programme on Tranquilization Technique for frontline staff of Odisha Forest Department	30

STATE BOTANICAL GARDEN, NANDANKANAN

The State Botanical Garden spreads over an area of 75 ha. is situated in the sylvan settings of the moist deciduous forest of the sprawling green Nandankanan Sanctuary hemmed between two wetlands. The Botanical Garden was established in the year 1963 and was under the management of Horticulture Department. The management of the State Botanical Garden was transferred to Nandankanan on 01.08.2006. One would be definitely impressed by the nature's symphony and the exquisite touch of the wilderness here. This is one of the pioneering plant conservation and nature education centre of the State. The Botanical garden is sure to provide memorable experience to the green enthusiasts. The State Botanical Garden is situated inside Nandankanan wildlife sanctuary. Kiakani lake with an area of about 25 ha. is located inside the State Botanical Garden.



Timing

The Garden remains open in all public days except Mondays
from 7.30 AM to 5.30 PM (April to September) during summer and
from 8.00 AM to 5.00 PM (October to March) during winter.

ENTRY FEE & OTHER CHARGES

Children upto 12 years	Free
Adult	Rs.20/-
Two wheeler	Rs.30/-
Three wheeler	Rs.30/-
Four wheeler	Rs. 100/-
Heavy vehicle	Rs.200/-

Picnic spot

Smaller pindies	Rs. 250/-	+ Rs. 50/-	(Service charges) each
Bigger pindies	Rs. 500/-	+ Rs. 50/-	(Service charges) each
Each room of the barrack	Rs. 1200/-	+ Rs. 100/-	(Service charges)
FRH-I- (Suit-I)	Rs.3000/-	+ Rs. 100/-	(Service charges)
FRH-I-(Suit-II)	Rs.2500/-	+ Rs. 100/-	(Service charges)
FRH-II	Rs.2500/-	+ Rs. 100/-	(Service charges)
Holiday Cottage- (ground floor)	Rs.2500/-	+ Rs. 100/-	(Service charges)
Holiday Cottage- (first floor)	Rs.2500/-	+ Rs. 100/-	(Service charges)
Special picnic pindies	Rs. 1500/-	+ Rs. 100/-	(Service charges) each
Picnic sheds	Rs. 1200/-	+ Rs. 100/-	(Service charges) each
Film shooting	Rs.25,000/-	per day	
TV serial/documentary shooting	Rs.15000/-	per day	
Album song shooting	Rs.10,000/-	per day	



INFRASTRUCTURE

The Botanical Garden covers 26 different satellite gardens spread all over undulating landscapes mixed with natural vegetation and meadows. The important facilities available in the Botanical Garden are described below.

Glass House

A spacious glass house of 2013 sq. ft. has been developed for housing succulent plants. A variety of bonsai adds beauty to the Glass House. One can enjoy blooming ornamental plants from the period from November to March.

Cactii House

A 1080 sq ft. Poly house houses important species of cactii and succulent plants. A rich collection of more than 1200 cacti are available in the Cacti House.

Dry Garden

A garden of xerophytic plants has been developed over an area of 0.65 Acre in front of Glass House. The entire garden has been designed with loose stone work to give it exclusive look of dry zone which attracts the visitors.

Green House

A state of art green house of 5200 sq. ft. houses the cultivars of 60 species of indoor plants like Aglaonema, Philodendron, Calathea, Cordyline, Diffenbachia, Spathophyllum, Peperomia, Monstera, Hemigraphis etc.

Children's Park

A niche for the kids has been created within the natural setting by providing swings, marry-go-round, sliding chute etc. The gallery located nearby filled with ornamental plants enhances beauty of the Park.

Buddha Park

The park has been developed over an area of 12000 sq. ft. located by the scenic beauty of Kanjia Lake. It features a beautiful Buddha Statue as its centre piece. Rain shelter, sit outs and ornamental flower beds are other attractions.

Artificial zoo

Models of different animals are used to explain the ecological niche with an objective to generate awareness among the children.

Butterfly Park

Butterfly Park, an interesting option among visitors has been developed over an area of 36590 sq.ft. The garden has an unique landscape with 6400 butterfly dependant plants. The garden has one cascading waterfall with 170 sq ft. flowing water channel, fountains and artistic bridges. One can sight more

than 58 species of butterfly here. The visitor will get the fragrance of beautiful flowers and feel the beauty of flying jewels of nature. The newly created Butterfly Park was opened to the visitors in February, 2014.

Butterfly Interpretation Centre

The Centre spreads over an area of 800 sq. ft. has been developed near the Butterfly Park. The newly opened centre has colourful pictorial display boards to disseminate information on butterfly to the visitors. The main objective of the centre is to provide latest information on various aspects of butterfly. A short documentary about butterfly is an added attraction. The Interpretation centre was opened to the visitors in March, 2015.

Rosarium

It is one of the richest collections of 1200 Rose plants belonging to 55 varieties grown over an area of 1.5 Acres of land. The garden is liked by the visitors most and has maximum foot flow during the winter.

Orchid House

The largest Orchid House of the State spreads over an area of 5000 sq.ft. and displays more than 1000 orchids of 57 varieties belonging to 37 species. One can enjoy the orchid in bloom round the year displaying various colour of nature.

Medicinal Garden

A well renovated medicinal garden spreads over an area of 2.26 Acre which displays of rich collection of 242 species of herbs, shrubs, creeper, climber and trees.

Japanese Garden

A state of art Japanese Garden in Tsukiyama-niwa style with flowing streams and other typical features is a star attraction. It covers an area of 0.50 acre.

Mughal Garden

The Mughal Garden covering an area of 1.01 ha has a cascade of flowing water and flowering plants both seasonal and perennial on both sides give a look of gardens of Mughal era. The garden is liked mostly by the young people and has maximum foot flow during winter.

Evolution Garden

The Evolution Garden covering an area of 0.77 ha gives complete information about the evolution system of plant kingdom. The one way path takes a visitor from lower plant groups like Algae, fungi, Bryophyta, Pteridophyta to evolution of large plant groups like Gymnosperm and Angiosperms. The concept of such garden is very informative for the students and researchers.

Heritage Garden

The Heritage Garden covering an area of 1.2 Acre is situated adjoining to the Evolution garden with natural rock and old Banyan trees. A Tulsi (*Occimum santum*) garden containing six varieties of Tulsi plant with models of monk, live size cow and tribal hut are the attraction of the garden.

Arboretum

The Arboretum spread over an area of 4 ha has been established with collection of more than 234 species (from 49 families) found in the Eastern Zone forests. A minimum of 10 nos. of each species has been planted with signage displayed. A network of path has been made through the plantation which will be an ideal walk way for botanization for the trainees and students.

Landscape Garden

It is a model landscaping having different elements like lawn, trees and shrubs spread over an area of 1.6 Acre. 1000 trees of different species have been planted to maintain the rhythm.

Palm Garden

Palm garden is an amazing site to see varieties of common and rare palms. A collection of 29 varieties of beautiful palms have been planted over an area of 15000 sq. ft. One designed water body along with 15000 sq. ft. grass carpet has been developed inside the Palm Garden for the public.

Bougainvillea Garden

One Bougainvillea garden has been developed over an area of 21400 sq.ft. More than 1000 Bougainvillea plants of different colours (8 varieties) have been

displayed in the garden. A series of creepers raised on the back of the garden adds beauty to the park.

Hibiscus Garden

A garden has been developed over an area of 11000 sq. ft, located in between glass house and Palm garden. More than 130 nos of plants of 27 varieties have been planted in the garden.

Carnivorous plant garden

The garden established inside the state botanical garden covering an area of 800 sq ft is intended to exhibit carnivorous plants. Nandankanan is first of its kind to display carnivorous Plants. The garden has been developed initially to accommodate 4 species of carnivorous plants with provision of naturalistic landscape.

Hydrophytes Garden

Hydrophytes garden is an amazing site to see varieties of common and rare hydrophytes. A collection of 23 varieties have been planted over an area of 0.1 Acre.

Visitor flow & revenue generated during last five years

Year	No. of visitors	Total Revenue collected (Rs. In lakh)
2013-2014	1,32,920	19.45
2014-2015	1,38,681	20.62
2015-2016	1,84,915	35.09
2016-2017	200007	54.28
2017-2018	192590	71.73







CONSTITUTION OF THE SOCIETY FOR MANAGEMENT AND DEVELOPMENT OF NANDANKANAN BIOLOGICAL PARK

Government of Orissa constituted the “Society for Management and Development of Nandankanan Zoological Park” on 27th August, 2005 and the society has been registered under the Registration of Societies Act of 1860 with Registration No. 22073/54 of 2005-2006 dated 27.08.2005, with the following principal objectives.

(a) Complementing, supplementing, strengthening or otherwise expanding the activities of Nandankanan Zoological Park in the cause of in-situ conservation of wildlife captive management of wildlife and eco-tourism and facilitating linkage between ex-situ and in-situ management of wildlife.

(b) To act as platform for open debate, discussion and subscribe to otherwise assist any charitable, benevolent, scientific, national, public or any other institution the object or purpose of which are consistent with or which promotes objects of the society.

c) To coordinate and liaise with national/international bodies, experts and funding agencies and to receive constitution and funds from Government of India, Central Zoo Authority, State Government or any individual, institute, national or

international agencies, any other institution of Central Government or State Government for specific conservation programme, development of eco-tourism amenities of Nandankanan.

(d) To receive and manage all contributions given to the Society in large interest of Nandankanan Zoological Park for maintenance and upkeep of zoo animals, improvement of the premises as well as maintenance and upkeep of zoo animals, improve the premises as well as maintenance and improvement of visitors amenities.

(e) To engage/employ such staff as may be necessary for efficient handling and conduct of business of the society with approval of General Body.

(f) To do all such acts and activities as area incidental or conducive to attainment of the objectives or directly beneficial to the society in promotion of its objects, subject to the overall control of the Chief Wildlife Warden and in conformity with the Society Registration Act, 1860.

To carry out any other activities in the furtherance of the above objectives.

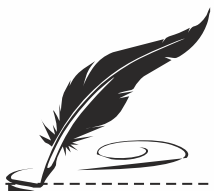
UNIQUENESS OF NANDANKANAN

- Only zoo in the world where melanistic tigers were born (2014 and 2016) and displayed to the visitors.
- It is the host zoo for white tigers, white tigers were born to normal coloured parents in 1980, a unique event in the world.
- First zoo in the country where endangered Gharials were born in captivity in 1980.
- A unique white tiger safari was established in the Zoological Park on 1st October, 1991.
- Presence of Kanjia Lake- A wetland of National Importance (2006)
- Conservation Breeding Centre for Indian Pangolins and Long billed vultures.
- Nandankanan has largest enclosures for housing Gharials and Hippopotamus.
- Second largest heronry for openbill storks in Odisha.
- Has a Captive Fodder Farm (over 33 Acs.) and a Slaughter house to cater the dietary needs of animals housed in the Zoological Park.
- First zoo in the country to become an Institutional member of World Association of Zoos & Aquarium (WAZA).
- First zoo in the country where endangered Ratel was born in captivity.
- First zoo in the country after which an express train 12815/12816 Puri-New Delhi Express has been named as “Nandankanan Express”.
- Wonderful site for wildlife conservation and education where one can experience integration of ex-situ and in-situ conservation of wild fauna and flora.













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