

NANDANKANAN ZOOLOGICAL PARK

ANNUAL REPORT (2016-2017)

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 3.1 million tourists visited the Zoological Park during 2016-17. 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-- (includes Kanjia lake of 66.1 ha.) Nandankanan Wildlife Sanctuary)--	362.1 ha. (3.62 Sq.Km.) 437 ha. (4.37 Sq.Km.)
Captive animals and birds as on 31.03.2016	Mammals	41 1175
	Birds	81 1546
	Reptiles	26 262
	Amphibians	06 21
	TOTAL	154 3004
No. of animal House	210 nos. (covered- 116, open moated- 94)	
Zoo holiday	Every Monday	
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)
	Reptiles	11.00 am to 1.00 pm
	Birds	11.00 am to 1.00 pm/3.00 pm to 5 pm
	Herbivores	11.00 am to 1.00 pm/3.00 pm to 5 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 Kanjia 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 more than 66 ha. lake. The boating service is outsourced for better management and satisfaction of the visitors. 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.

White tiger safari

A unique white 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 a white tiger 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 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 5 ha. has been established in the zoo during the year 2012. 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.

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 and a huge Reticulated Python inside the reptile park.

Reptile Interpretation Centre

An Interpretation Centre depicting the evolution and biology of reptiles has been established in 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.

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 30.03.2012. 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.

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.

VISITORS' AMENITIES

- Drinking water kiosks
- Toilets at convenient locations
- Special toilets, wheel chairs & ramps for differently abled persons
- Rest areas / sit-outs / visitors' sheds at various locations.
- Tourist cottages
- Restaurant & Snacks bar (run by OTDC)
- Cloak room near the entrance gate

- Perambulator for children
- First-aid (at zoo hospital & administrative office)
- Library
- Emission free battery operated vehicles
- Guide maps
- Publications
- Nature shop (Souvenir shop)
- Children Park
- Souvenir shop

ENTRY FEES AND OTHER CHARGES

<u>NANDANKANAN ZOOLOGICAL PARK</u>		<u>Safari</u>	
<u>Entry Fee:</u>		Lion safari & White tiger safari- Rs. 30/-	
Indians (Above 12 years)	- Rs.25/-	Herbivore safari	Rs.10/-
Children Age group of 3-12	- Rs. 10/-	Bear safari-	Rs. 10/-
Foreign visitor -	Rs.100/-	Toy Train	Rs.10/-
Differently able persons & Children below 3 years	- FREE	<u>Aquarium-</u>	
Tourist Cottage	- Rs.200 & 300/-	Adult-	Rs.10/-
Film Still Camera	- Rs.5/-	Children-	Rs.5/-
Digital Still Camera	- Rs. 10/-	<u>Boating (for 30 minutes)</u>	
Handy cam camera	- Rs.100/-	Paddle Boat (2 seater)	Rs.35/-
High end Video Camera		(4 seater)	Rs.70/-
(Amateur Photographer)	- Rs.500/-	Family boat	Rs.120/-
Movie Camera(Professional Photographers)	- Rs.4,000/-	Wheel chair for differently able persons-	Free
		Perambulator for children	Rs.2/- per hour
		Battery Operated Vehicle-	Rs. 50/- per person

Month wise number of visitors during 2016-17

Month	No. of visitors	Month	No. of visitors
April	1,37,794	October	3,13,051
May	1,76,096	November	2,10,327
June	2,63,319	December	4,43,730
July	1,85,566	January	4,58,346
August	2,20,851	February	2,93,766
September	1,86,413	March	2,88,207
Free entry of school children during Wildlife Week & Childrens' Day			3,225
Free entry of differently abled persons			690
TOTAL			31,81,381

CADRE STRENGTH:**(A) Director's office in Mayur Bhawan, Bhubaneswar**

Sl. No.	Name of each category of post	Sanctioned strength	No. of staff in position	No. of vacancy
1	Director	1	1	-
2	A.C.F.	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. Nandankanan Zoological Park

Sl. No.	Name of each category of post	Sanctioned strength	No. of staff in position	No. of vacancy
1.	Deputy Director, NKZP	1	1	-
2.	Sr. Veterinary Officer	1	1	-
3.	Assistant Director/ACF	2	2	-
4.	Veterinary Asst. Surgeon	1	1	-
5.	Forest Ranger	7	7	-
6.	Biologist	1	1	-
7.	Education Officer	1	1	-
8.	Deputy Ranger	1	-	1
9.	Forester	9	7	2
10.	Forest Guard	25	19	6
11.	F.E.S.	1	-	1
12.	Head Clerk	1	1	-
13.	Junior Accountant	1	-	1
14.	Jr. Stenographer	1	1	-
15.	Senior Clerk	4	3	1
16.	Junior Clerk	4	3	1
17.	Driver (L.V.)	4	2	2
18.	Driver (H.V.)	3	3	-
19.	Fitter-cum-Mechanic	1	-	1
20.	Engine Driver	1	-	1
21.	Livestock Inspector	3	2	1
22.	Guide	1	-	1
23.	Projector operator	1	-	1
24.	Booking Clerk	3	3	-

25.	Artist-cum-Modeler	1	1	-
26.	Junior Librarian	1	1	-
27.	Khansama	1	1	-
28.	Gangman	2	-	2
29.	Sweeper	10	9	1
30.	Animal Keeper	25	23	2
31.	Office Peon	1	1	-
32.	Mate	2	1	1
33.	Mahout	3	3	-
34.	Mali	5	4	1
35.	Watchman	7	6	1
36.	Boatman	2	1	1
37.	Ticket Collector	2	1	1
38.	Zoo Watcher	6	4	2
39.	Bungalow Chowkidar	3	1	2
40.	Winch Operator	1	1	-
41.	Cook-cum-Animal feed Distributor	1	-	1
42.	Welder-cum-Blacksmith	1	-	1
	Total	152	114	38
Total strength of Nandankanan Zoological Park including Director's office		168	125	43

C. 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	2	1
13.	Watchman	1		1
	TOTAL	26	3	23

HUMAN RESOURCE DEVELOPMENT:

(A) Workshop/Training programmes:

- Sri Rajesh Kumar Mohapatra, Biologist, Nandankanan Zoological Park has undergone an interactive training programme on Zoological Information Management System (ZIMS) at Bhagwan Birsa Zoological Park, Ranchi organized by CZA and Species360 from 5th to 9th September, 2016.
- A training programme on tranquilization with hands on practice was conducted for trainees of Chhattisgarh Forest Department at Nandankanan on 6th and 7th December 2016. A total of 30 personnel including forest officers and veterinarians have participated in this programme.
- Dr Debabrata Mohapatra, Specialist, Nandankanan Zoological Park has participated in a workshop on Veterinary Management of Reptiles at Madras Crocodile Bank Trust, Chennai from 16th to 18th January 2017.
- A training programme on tranquilization with hands on practice was conducted at Nandankanan on 19th and 20th March 2017. The training programme was attended by 28 field staff from eight territorial circles of Odisha.

(B) Exposure visit:

- Sri Sisir Kumar Acharya, Director, Nandankanan Biological Park and Sri Amulya Kumar Parida, Range Officer, Nandankanan Zoological Park had been to Nehru Zoological Park, Hyderabad, Chamarajendra Zoological Garden, Mysore and Arignar Anna Zoological Park, Chennai from 7th September 2016 to 14th September 2016.
- Sri Pradeep Kumar Nandi, Livestock Inspector, Nandankanan Zoological Park and Sri Susant Kumar Behera, Forest Guard, Nandankanan Zoological Park had been to Alipore Zoological Garden, Kolkata, from 3rd November 2016 and 4th November 2016.

FINANCE**Revenue collected**

An amount of Rs. 969.53 lakhs was generated towards revenue from all sources during 2015-16.

Visitor flow and revenue generated during the year 2015-16

Item	Visitors number	Revenue (in rupees)
Common Visitors (Above 12 years)	2703464	67440025
Children (3 to12 years)	434817	4330450
School children	37850	378500
Foreign visitors	1335	133400
Free entry during Wildlife Week and Childrens' Day	690	0
Free entry of differently abled persons	3225	0
Still camera	1210	2460
Digital camera	47359	470100
Handycam	500	117200
Video camera	2	0
Tourist cottage		4000
Boating facilities		1106600
Safari facility		8432647
Rent of Parking Place		4152760
O.T.D.C. Restaurant		86400
O.T.D.C. snacks bar		65000
Cloak room		139174
Rent of Weighing machine		24192
Rent of BOV facility		2979610
Rent of Aquarium facility		377775
Rent of Souvenir shop		180000
Fine collected		6300
Forfeited EMD amount		9240
Rent of ATM counter		60000
Sale of waste cattle bones		55330
Rent of Gate complex toilet		90415
Walk Through Aviary		652901
Cost of tender paper		38406
Revenue collected at Botanical garden		5001450
Online entry/facility reservation charges (item 1-5 & 24)		618916
Total revenue collected		Rs. 9,69,53,251

Revenue generated during last five years

Visitor flow during last five years		
Year	No. of visitors (in lakh)	Total Revenue collected (Rs. In lakh)
2012-2013	29.059	645.22
2013-2014	27.615	664.49
2014-2015	29.047	716.86
2015-2016	33.193	856.90
2016-2017	31.813	969.53

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
1	2	3	4	5	6	7	8	10	11
2012- 13	Allotment Expenditure	494.64 493.34	84.65 84.65	1.00 1.00	8.60 6.88	56.25 20.25	68.76 38.86	675.62 668.04	1389.52 1313.02
2013- 14	Allotment Expenditure	693.84 689.55	16.00 16.00	- -	6.51 6.51	38.42 9.723	63.28 63.24	1157.03 893.03	1965.08 1678.05
2014- 15	Allotment Expenditure	778.34 760.64	7.00 7.00	- -	6.29 6.29	40.12 27.09	60.00 31.44	1063.50 881.30	1955.25 1713.76
2015- 16	Allotment Expenditure	707.93 698.84	65.7 65.7	- -	6.65 6.65	15.00 15.00	119.75 118.78	944.00 767.91	1859.03 1667.87
2016- 17	Allotment Expenditure	859.84 859.83	12.10 12.10		8.886 8.886		597.50 293.26 (continuing)	1113.120 867.381	2591.44 2041.56

EXCHANGE OF ANIMALS:

Arrival of new animals from different zoos under animal exchange programme (2016-17).

Name of the zoo	Date	Animal brought	Animals sent
Madras Crocodile Bank Trust, Chennai	20.07.2016	Cuvier's dwarf caiman (2M+3F)	Water monitor lizard (1M+3F)
Nehru Zoological Park, Hyderabad	07.12.2016	Indian tiger (1M), White peafowl (1M+1F), Mouse deer (5M+2F), Red jungle fowl (2M+3F), Painted stork (2M+2F), Mugger Crocodile (2M+3F)	Indian tiger (1F) Water monitor Lizard (1M+2F) Mouse deer (1F) Java sparrow (10M+10F) Zebra finch (10M+10F) Golden pheasant (1M+1F)
Nawab Wajid Ali Shah Zoological Garden, Lucknow	20.03.2017	Painted stork (2M+2F) Gharial (4M) Swamp deer (3M+2F)	Sloth bear (2M+1F)

Notable births:

Four horned antelope, Hog deer, Gaur, Giant squirrel, Brow antlered deer, Common palm civet, Sambar, Blackbuck, Lion, Hippopotamus, Rhesus macaque, Barn owl, Black kite, Night Heron, White Ibis, Eastern rosella, Swainsons's lorikeet, Grey pelican, Emu, Gharial and Water monitor lizard.

New arrivals:

Mayer's parrot, Red bellied parrot, Cuvier's dwarf caiman and Red jungle fowl

Successful rearing

Hand rearing of young wild animals is always a challenging task. Conservation breeding programme of gharial crocodiles restarted at Nandankanan in a newly constructed hatchery during 2015. The gharial eggs collected from nests at sand banks of gharial pool were incubated in the hatchery to get the hatchlings. Presently 76 numbers of gharial hatchling are being reared in the hatchling pools.

IMPORTANT HAPPENINGS DURING THE YEAR

Renovation of Jackal enclosure

The existing small closed-top Jackal (*Canis aureus*) enclosure No. 23 was complete renovated to meet this standards fixed by Central Zoo Authority. This open top enclosure attempts to exhibit the species in a large naturalistic enclosure to maximise visitor satisfaction and wellbeing of the inhabitants. This project was started during July, 2016 and completed in December, 2016 with an expenditure of Rs. 33 Lakhs. The enclosure has an exhibit area of 950 sqm with a dry moat, six feeding cubicles with drop gate system, 3 back kraals and a keeper's corridor. Besides the existing natural vegetation, *Ficus bengalensis* trees, bamboo and grasses have been planted inside in the enclosure. In addition, enclosure enrichments like wooden and bamboo machan, platforms, stone caves, stilt root cave, wooden logs and water trough etc. has been provided to encourage their natural behaviours. Jackals are being exhibited in this new enclosure from 29 December 2016.

Wild blood line infusion to the Tiger population of Nandankanan

One male wild tiger sighted during March 2013 near white tiger safari of Nandankanan. Eventually it was allowed to enter into the 30 acre tiger Safari area in the midnight of 29.04.2013. On 31.05.2013, it was shifted to enclosure number 32C. On the same night the tiger escaped from the enclosure by scaling 18 feet height chain link

mesh fence. Once again the wild tiger was allowed enter the enclosure number 32C on 07.07.2013 and shifted to the top covered enclosure number 31D on 09.07.2013. It was named 'Nandan' and kept at Nandankanan with permission from Government of India & Government of Odisha for use in conservation breeding programme. Two normal coloured male cubs were born on 20.04.2016 from wild tiger 'Nandan' and the zoo born tigress 'Megha'. The breeding event fulfilled the purpose of keeping 'Nandan' in captivity by infusion of wild gene in captive tiger population of Nandankanan. The wild tiger 'Nandan', 'Megha' and her cubs are being exhibited to visitors from 29.12.2016.

Online ticket booking facility

Online ticket booking facility commenced for Nandankanan Biological Park from 29.12.2016, a step toward cashless transition. From today visitors can book ticket online in addition to the existing facilities of selling electronic tickets at the booking counters for fees for entry to Nandankanan Zoological Park as well as the entry fee and vehicle entry fee of State Botanical Garden can also be purchased online through Debit card/Credit card and Internet banking. The reservation of all Picnic spots/ Picnic sheds/Rest houses/Cottages in the State Botanical Garden shall be made through online only.

Wi-Fi CCTV surveillance system

CCTV surveillance system through Wi-Fi mode is initiated from 29.12.2016 having 8 transmission towers and 43 cameras are installed on 18 poles which cover the entire visitors' path to monitor the activities inside the park. The project was executed by Electronic Corporation of India Limited with a cost of Rs 91.30 Lakhs.

Animal under Adoption (2016-17)

Sl. No.	Name of the persons/Institution	Animals/birds adopted	Period of Adoption
1.	Dr. V. Narayan, Flat S-2 Jain Sashi Graha, Jagadhambal Street, T. Nagar, Chennai, Tamil Nadu	One Indian Tiger	1st February, 2015 to 31st January, 2017
2.	Addl.General Manager (Min.) CSR, Odisha Mining Corporation Limited, OMC House, Bhubaneswar-751001	Five Indian Tiger	15th February, 2017 to 14th February, 2018
3.	Mr. Jogesh Chandra Sahu, State Bank of India, SME Branch, Bisra Chowk, Rourkela, Odisha	Seven Alexandrine Parakeets	1st April, 2016 to 31st March, 2017
4.	Dr. CBS Senger, Sr. Vice President, Bhushan Steel Limited, Narendrapur, Meramandali, Dhenkanal, Odisha	Two Green Winged Macaw	1st January, 2017 to 31st December, 2017
5.	Sri Nihar Ranjan Samal, Branch Manager, IDBI Bank, Janapath Branch, Saheed Nagar, Bhubaneswar, Odisha	One Leopard	1st September, 2016 to 31st August, 2017
6.	Dr Soumya Subhadarshini Santra, Badasanka, Puri, Odisha	One Fresh Water Turtle	2nd October, 2016 to 1st October, 2017
7.	Smt. Shila Naik, Tambibahal, Bhedabahal, Sundergarh, Odisha	One Java Sparrow	1st February, 2016 to 31st March, 2017
8.	Sri Trinath Nayak, Arapur, Dolanapur, Banki, Odisha	One Love Bird	1st May, 2016 to 30th April, 2017
9.	Sri Rajib Lochan Naik, Retired Forester, Tambibahal, Bhedabahal, Sundergarh, Odisha	One Zebra Finch	1st February, 2016 to 31st March, 2017
10.	Mrs Priyadarshini, Udgata, Badasankha, Puri, Odisha	One Black Swan	24th September, 2016 to 23th August, 2017

IMPRESSION OF OUR ESTEEMED GUESTS

This is my first visit and I am delighted to see the variety of animals. Everything is well maintained. Great hospitality ! Looking forward to visit again.

Justice M.M. Khan
Kolkata High Court
13.04.2016

Indeed, it is a pleasure ride inside the zoo. The zoo is well-maintained and deserves accolade to the staff. All the places of stay of animals, birds, reptiles and fishes are maintained properly. The ambience is very natural and successfully send across the message is the visitor about the need of care towards the zoo dwellers. The strength of the zoo lies in a face of wide range of zoo-dwellers. The zoo houses wild animals, reptiles and birds in a very natural environment. Last but not the least, the hospitality of the officers and staff is incredible and full of warmth. The brief discussion with the officers made me feels about the care they undertaken of the zoo-dwellers. I express my gratitude and heartfelt thanks to them.

Dr. Uday Sharkar
IIT, Kharagpur

Visited this place after 28 years. Lots of improvement in the park. Amazing place to learn behavior of wild animals. Thanks for the hospitality and care.

Digvijay Singh Khati
PCCF & CWLW
Uttarakhand
13.07.2016

Very enjoyable and interesting tour. Beautiful environment. Thank you for the hospitality.

Peter & Ann Dawan
Isle of Wight, UK
15.07.2016

Thank you for this beautiful park in this wonderful zoo. Very nice experience.

Haxima Durovteuil
Shephnic Sanchez
Toulouse France
15.07.2016

I have quick visit to the zoological park along with Mr. Mohanty, RFO. Some of enclosures are out sourced for maintenance, some rare species are breeding here. It is wonderful to see the enrichment of the enclosures, good maintenance by the staff. Staff are doing good job here. My greetings to all field staff and officers. The front gate may be renovated with good architectural assistance.

Sara Shegyl
Inspector General of Forests
NTCA, MoEF

I visited Nandankanan Zoo and I am happy with the hospitality which I received from the staff. The zoo is 2nd biggest in the country and well managed. I wish this institution/organization should grow like a tree in the bank of the lake. Some more improvement is required. More expenditure is required to modernize this zoo. Children train be re-incarnated, not the less the rope way. I wish this zoo should be No. 1 in the country.

N. Pujari
Speaker, OLA
19.07.2016

I visited the zoo today. It is really well laid out and having very good enrichment for the animals. It is one the most visited zoo for this reason, as well as the fact that rates are also very reasonable for the public. Conservation breeding programme is also going on well.

Anurag Choudhury
Member Secretary
Maharashtra State Zoo Authority, Nagpur
26.08.2016

We visited Nandankanan Zoo today with student from Czech Republic all of us were excited by animals you have here and enjoyed helpful staff. Thanks to you and good luck in next future.

Lubos Passian
Czech University of Life Science
28.08.2016

It was a nice experience to visit the Nandankanan Zoo. I especially enjoyed white tigers because they were really active and I liked their exhibition. It is great that the zoo is plastic free and that visitors can find bins easily. I thank you for amazing visit. Good luck.

Nikola Sohuthian
Czech University of Life Science
28.08.2016

Today I had a wonderful visit to Nandankanan. I was very impressed by the space given to the animals and the professional care that they are given. The environment is beautiful. I saw a lot of the results of the successful breeding programme that are helping to save endangered species. Great and important works. Good luck in the future. We look forward to bringing students here for study purpose.

Dr. Ron Harper
Centurion University
04.09.2016

I visited the zoo with Dy. Director, Biologist and Range Officer. Saw all enclosures and gained information regarding animals, its behavior, its keeping, renovation of enclosures. Saw medical facilities and interacted with vet. Doc. My exposure will help me managing safari/zoo's of Chhatisgarh. Found a lot of research activities (Pangolin breeding etc.) Well planned zoo with good display's. Animal looked healthy playful. Overall management very good. My best wishes for future to all zoo team. Nice work.

S.K. Singh
APCCF Wildlife
Chhattisgarh
27.10.2016

We are happy to see efficient management of Nandankanan Zoo by staff. It has a diverse flora & fauna. There is a huge potential to improve and attract national and international tourists/visitors. The issue of invasive species is a threat to biodiversity in the lake. Hence, some scientific mechanism may be institutionalized to eradicate these species. Wishing all the best to team Nandankanan for future endeavors.

Shayab Ahmed Kalal
Dy. Director, Forest & Climate Change
Govt. of India- New Delhi- 15.09.2016

Thank you for your hospitality and showing us around your zoo. Such beautiful animals. Lets hope one day we can make our planet safe for them to all live in the wild again.

Kate Matheson
New Zealand
Sophie Beechar
Australia

Thank you for your kind hospitality and for showing us around your zoo and especially for the visit to see the Indian pangolin and for the work you are doing to help this species through conservation and awareness of this special animal.

Naomi Doak
IUCN World Heritage Evaluation Mission
08.11.2016

Thank you very much for your hospitality. Our special tour around the zoo has been very interesting. Many thanks for your efforts to show us the highlights, including the Indian Pangolin and the Melanistic tigers. Good luck with the breeding efforts for these and other species. I hope this zoo will continue its successful breeding and awareness raising programmes.

Remco Van Merm
IUCN World Heritage Evaluation Mission
08.11.2016

Nandankanan has given me several memorable moments in my stint here as the Dy. Director. Now, when I visit this renowned ex-situ conservation centre, I feel tremendous pride of having been associated with this park. There has been several new developments. May this institution grow from strength to strength. All the very best to the zoo, its management and kinds for the dedication and prevalence of all concerned.

Manoj V. Nair
Wildlife Institute of India and
IUCN World Heritage Evaluation Mission
08.11.2016

The visit to Nandankanan zoo was exciting and mind soothing. The way in which the animals are taken care is a trendsetter in itself. The attempt to combine the experience of zoo and sanctuary was enthralling and innovative. The lake view rest house and the portico takes us to nature and the view from here is exuberant.

Sr. Commandant, RPF
Khurda
22.11.2016

We visited the Nandankanan Zoo today. It was very well maintained and the preservation/conservation of bio-diversity is worth emulating. The moral of the staff was also very encouraging. I wish the zoo authorities all success in their future endeavors.

C.J. Venugopal, IAS
Principal Secretary
08.11.2016

I thoroughly enjoyed my visit to Nandankanan. It is unique in many ways. I am impressed with the mortality records of the zoo which is lowest in the country. Thanks for the hospitality offered by the officers of the zoo.

R.K. Singh,
CWLW, Chhatisgarh
19.01.2017

An exceedingly well managed zoo kept in most natural condition. Work-Through aviary is a good idea for having a close look of birds. The efforts of highly dedicated staff and officers is praiseworthy.

L.R. Singh
CWLW, Jharkhand
19.01.2017

Superbly maintained, excellent effort to conserve gene pool. We need many several Nandankanan in the country.

Dr. D.S. Srivastava
Wildlife Biologist
Jharkhand
19.01.2017

I had the opportunity of a short visit to Nandankanan, after a period of about 25 years. It was a pleasure to listen to the passionate arguments and views of Mr. Purohit. I would like to visit again and spent some quality time here.

Niraj Singhal
APCCF, Western Circle
West Bengal
19.01.2017

First visit, great views of various species, very good for visitors. Would definitely recommend of friends and relatives. Great wish for the future.

Col. Barun Sarin
Gurgaon
03.02.2017

An excellent habitat and extremely well managed wildlife park. It is extremely delightful visit to see animal kept in visitor friendly condition and well taken care of. The tour was very well conducted by the team. This made the whole experience a very nice one. Hope many other wildlife parks and zoos follow this wonderful example. My sincere thanks and best wishes to "Team Nandankanan" for an excellent visit.

Jai Hind.

Mahendra Singh
Air Vice Marshal
Sr. Officer in-Charge Administration
Shilling, Meghalay
15.02.2017

HEALTH 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 26 lakhs during 2016-17 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.

Intervention by the veterinary wing of the zoo.

Sl. No.	Activities	Number of cases dealt
1	Cases treated	10460
2	Surgery performed	4
3	Deworming	4807
4	Chemical immobilization	55
5	Screening of blood smears	59
6	Bio-chemical assays	30
7	Bacteriological examination	13
8	Faecal Sample examination	743

Vaccination:

Sl. No.	Vaccination	Number of cases dealt
1	BioFel PCHR (against Feline Panleucopenia)	73
2	Triovac	16
3	H.S.V.	16
4	Triquin	115
5	Anti Rabies Vaccine	7
6	Tetanus Toxoid	8
7	Multivalent Vaccine (DHPPi)	18
8	B.Q. Vaccine	38
9	Anthrax Vaccine	7
10	F.M.D.	8

PROPHYLACTIC PROTOCOL

A set of protocol are hermitically 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 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 quarterly interval.
- Vaccination of elephants against Haemorrhagic Septicemia, Tetanus, Rabies and Foot & Mouth Disease. Vaccination of four horned antelopes with BQ vaccine.
- Body spray with cypermethrin at 2 months interval against ticks, flies and other vectors in case of big cats.
- K-Orthrine sprays in enclosures at two months intervals.
- Screening of the fecal samples of all Nandankanan Biological Park inmates and de-worming at 3 months interval.
- Periodical screening of blood samples.

Zoological Information Management System (ZIMS)

ZIMS is the world's first and only real-time, unified global database for animals in zoos and aquariums developed by Species360. ZIMS allow users to see collections of animal data in real time, and will enhance local care and international conservation efforts by providing faster and better access to species information. As of 2016, the organization serves 874 zoos and aquariums in 90 countries worldwide and has 21,000 taxa at species level in its database. Members can use the basic biologic information (age, sex, parentage, place of birth, circumstance of death, etc.) collected in the system to care for and manage their animal collections (including demographic and genetic management in many cases). Species360 and the Central Zoo Authority of India (CZA) have a five-year memorandum of understanding with a primary goal of migrating the majority of the zoos in India into the ZIMS database. Nandankanan Zoological Park is a member of Species360 and presently uses ZIMS to manage its current animal collection in the ZIMS database, which need to be regularly updated. The available historical data of the animals and medical records will be updated subsequently.

**ANNUAL REPORT ON BIRTH OF CAPTIVE ANIMALS
AT NANDANKANAN ZOOLOGICAL PARK
FROM 01.04.2016 TO 31.03.2017**

Sl. No.	Date	MAMMALS	
1.	20.04.2016	Indian tiger (Normal coloured)	2 (M)
2.	30.04.2016	Blackbuck	1(F)
3.	22.05.2016	Spotted deer	3(US)
4.	23.05.2016	Spotted deer	2(US)
5.	24.05.2016	Spotted deer	2(US)
6.	25.05.2016	Indian tiger (Normal coloured)	1(M) Still birth
7.	06.06.2016	Spotted deer	3(US)
8.	07.06.2016	Spotted deer	2(US)
9.	08.06.2016	Spotted deer	2(US)
10.	25.06.2016	Spotted deer	2(1M+1F)
11.	01.07.2016	Spotted deer	4(3M+1F)
12.	05.07.2016	Jungle cat	3(US)
13.	05.07.2016	Spotted deer	2(US)
14.	13.07.2016	Gaur	1(M)
15.	19.07.2016	Spotted deer	3(1M+2F)
16.	31.07.2016	Common palm civet	4(US)
17.	01.08.2016	Spotted deer	3(1M+2F)
18.	05.08.2016	Indian tiger	3(1M+1F white cubs and 1 male melanistic cub)
19.	09.08.2016	Indian tiger (Normal coloured)	2(1 white colour male +1 Normal colour female)
20.	19.08.2016	Four horned antelope	1(US)
21.	31.08.2016	Blackbuck	1(F)
22.	31.08.2016	Barking deer	3(US)
23.	31.08.2016	Spotted deer	2(F)
24.	04.09.2016	Sambar	1(US)
25.	06.09.2016	Spotted deer	3(F)
26.	08.09.2016	Blackbuck	1(US)
27.	18.09.2016	Spotted deer	2(M)

28.	21.09.2016	Spotted deer	5 (US)
29.	22.09.2016	Common palm civet	4 (US)
30.	23.09.2016	Spotted deer	4(US)
31.	28.09.2016	Spotted deer	4 (US)
32.	30.09.2016	Hog deer	1(US)
33.	30.09.2016	Spotted deer	5(US)
34.	04.10.2016	Spotted deer	2(M)
35.	06.10.2016	Hippopotamus	1(US)
36.	10.10.2016	Brow antlered deer	1(F)
37.	11.10.2016	Hog deer	1(US)
38.	12.10.2016	Black buck	1(US)
39.	21.10.2016	Spotted deer	3(1M+2F)
40.	21.10.2016	Hog deer	2(US)
41.	27.10.2016	Hog deer	1(US)
42.	29.10.2016	Nilgai	1(US)
43.	06.11.2016	Hog deer	1(US)
44.	08.11.2016	Sambar	1(US)
45.	15.11.2016	Spotted deer	2(1M+1F)
46.	29.11.2016	Hog deer	2(US)
47.	30.11.2016	Sambar	1(US)
48.	04.01.2017	Spotted deer	2(M)
49.	14.01.2017	Spotted deer	3(2M+1F)
50.	17.01.2017	Spotted deer	3(1M+2F)
51.	19.01.2017	Brow antlered deer	1(US)
52.	24.01.2017	Spotted deer	4(M)
53.	25.01.2017	Hippopotamus	1(US)
54.	27.01.2017	Spotted deer	4(M)
55.	28.01.2017	Hog deer	2(US)
56.	29.01.2017	Spotted deer	5(2M+3F)
57.	01.02.2017	Spotted deer	5(3M+2F)
58.	03.02.2017	Spotted deer	3(1M+2F)
59.	04.02.2017	Spotted deer	5(3M+2F)
60.	17.02.2017	Spotted deer	4(3M+1F)

61.	01.03.2017	Spotted deer	8(7M+1F)
62.	06.03.2017	Lion	1(US)
63.	05.03.2017	Spotted deer	7(5M+2F)
64.	08.03.2017	Spotted deer	4(2M+2F)
65.	11.03.2017	Spotted deer	7(4M+3F)
66.	24.03.2017	Jackal	2(US)
67.	25.03.2017	Giant squirrel	1(F)
68.	26.03.2017	Barking deer	6(US)
69.	26.03.2017	Spotted deer	20(10M+10F)
70.	27.03.2017	Rhesus monkey	3(US)
71.	27.03.2017	Spotted deer	10(5M+5F)
72.	27.03.2017	Nilgai	1(US)
73.	28.03.2017	Spotted deer	5(3M+2F)
74.	29.03.2017	Spotted deer	20(12M+8F)
75.	30.03.2017	Spotted deer	10(5M+5F)
		BIRDS	
76.	31.07.2016	Java sparrow	4(US)
77.	31.07.2016	Cockatiel	4 (US)
78.	19.08.2016	Alexandrine parakeet	2(US)
79.	28.09.2016	Cockatiel	3US
80.	01.01.2017	Barn owl	3US
81.	01.01.2017	Grey pelican	1US
82.	31.01.2017	Zebra finch	12 US
83.	31.01.2017	Java sparrow	8US
84.	11.02.2017	Emu	1US
85.	25.03.2017	Budgerigar	10US
86.	25.03.2017	Night heron	6US
87.	25.03.2017	White ibis	5
88.	25.03.2017	Black kite	2US
89.	25.03.2017	Eastern rosella	1US
90.	26.03.2017	Swainson's lorikeet	1US
91.	27.03.2017	Barn owl	1US
92.	30.03.2017	Budgerigar	4US

		REPTILES	
93.	23.04.2016	Water monitor lizard	2(US)
94.	26.03.2017	Gharial crocodile	10US
95.	27.03.2017	Water monitor lizard	1US

ABSTRACT

	MAMMAL	BIRD	REPTILE	AMPHIBIAN	TOTAL
BIRTH	147	68	13	0	228

ANNUAL REPORT ON DEATH OF CAPTIVE ANIMALS AT NANDANKANAN ZOOLOGICAL PARK
(From 01.04.2016 to 31.03.2017)

SL.NO.	DATE	ANIMAL	AGE	SEX	CAUSE OF DEATH
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MAMMALS

1	23.04.16	Four horned antelope	Adult	M	Shock associated with multiple fracture of Radio-ulna with internal muscle haemorrhage of right fore leg and acute pneumonia
2	28.04.16	Himalayan Black bear	4 months	M	Haemopericardium and hepatitis
3	04.05.16	Barking deer	Adult	F	Pneumonia
4	30.05.16	Indian elephant 'Jagan'	About 7 years	M	Black Quarter
5	31.05.16	Marmoset	1 year 4 months	F	Hepatitis and nephritis
6	18.06.16	Striped hyena	About 20 years	F	Pneumonia associated with old age
7	19.06.16	Barking deer	Adult	M	Pneumonia
8	03.07.16	Normal Colour Tiger	About 20years 8 months	F	Weakness, multiple hepatic cystic tumors, haemorrhagic gastro-enteritis and nephritis associated with old age
9	03.07.16	Barking deer	Adult	F	Septicemia resultant of injury
10	04.07.16	Gaur	About 1yr 1 month	F	Rumenitis with frothy bloat and abomasitis with hemorrhagic ulcers.
11	09.07.16	Spotted deer	Adult	M	Infighting
12	22.07.16	Marmoset	Adult	M	Acute pneumonia associated with nephritis and enteritis.
13	11.08.16	Sambar	Adult	M	Nasal tumor

14	12.08.16	Barking deer	Adult	F	Hepatitis
15	20.08.16	Grant's Zebra	About 2 years	F	Acute pneumonia, tracheitis associated with enteritis.
16	21.09.16	Jungle cat	About 3 months	F	Hepatitis and anaemia
17	26.09.16	Chimpanzee	About 1yr 9 months	M	Pneumonia associated with hepatitis suspected for bacterial infection
18	28.09.16	Rhinoceros	About 40 years	M	Impaction associated with old age
19	29.10.16	Grant's Zebra	About 2 years	F	Haemorrhagic myositis with septicemia suspected for <i>Clostridial</i> infection like BQ
20	03.11.16	Sambar	Adult	M	Infighting
21	18.12.16	Nilgai	1½ years	M	Septicemia
22	28.12.16	Mouse deer	About 1 yr	M	Pneumoenteritis suspected for <i>Pasteurella</i> infection
23	10.01.17	Mouse deer	Adult	M	Chronic passive congestion and shock
24	17.01.17	Jungle cat	Adult	M	Haemorrhagic enteritis, Jaundice and anaemia
25	20.01.17	Jungle cat	Adult	F	Haemorrhagic enteritis, Jaundice and anaemia
26	03.02.17	Jackal	Adult	M	Haemoperitonium, haemorrhagic gastritis and haemorrhagic enteritis.
27	21.02.17	Sambar	Adult	F	Nasal tumor
28	28.02.17	Manipuri deer	Adult	F	Suspected for Tetanus
29	22.03.17	Hippopotamus	About 15 years	M	Pneumonia and Septicemia
30	26.03.17	Manipuri deer	Adult	M	septicemia

BIRDS

1	24.05.16	Jandaya conure	Adult	F	Hepatitis and nephritis
2	24.05.16	Koel	Adult	F	Old age with pneumonia
3	05.06.16	Reev's Pheasant	Adult	M	Ingluvitis
4	16.06.16	Sun conure	Adult	M	Hepatitis and enteritis
5	29.06.16	Silver pheasant	Adult	F	Salpingitis associated with old age
6	29.06.16	Ring necked	Adult	F	Enteritis

		dove			
7	05.07.16	Eastern Rosella	Adult	F	Enteritis
8	21.07.16	Pineapple conure	Adult	F	Enteritis with tape worm infestation
9	25.07.16	Lady Amhrests pheasant	Adult	F	Hepatitis and enteritis associated with jaundice
10	19.08.16	Yellow sided conure	Adult	M	Infighting
11	31.08.16	Sun conure	Adult	F	Hepatitis and nephritis
12	30.09.16	Mute swan	Adult	F	Enteritis and hepatitis
13	11.10.16	Ring necked pheasant	Adult	M	Hepatitis, pneumonia and enteritis
14	01.11.16	Nicobar pigeon	About 25 years	M	Old age with pneumonia
15	05.11.16	Jandaya conure	Adult	M	Haemorrhagic enteritis
16	08.11.16	Violet turaco	Adult	M	Hepatitis and enteritis
17	10.03.17	Mandarin duck	Adult	F	Visceral Gout
18	18.03.17	Red Jungle fowl	Adult	M	Anaemia and tumor in liver and spleen

REPTILES

1	04.01.17	Water monitor lizard	Adult	M	Pneumonia associated with old age
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ABSTRACT

Mammals	Birds	Reptiles	Total
30	18	01	49

**BIRTH AND DEATH OF CAPTIVE ANIMALS FOR THE LAST FIVE YEARS
TOTAL STOCK POSITION FROM 01.04.2011 TO 31.03.2016**

2011-12

Types	Stock as on 01.04.2011	Birth	Acquisition/ procurement	Death	Disposal	Stock as on 31.03.2012
Mammals	690	110	19	40	04	775
Birds	856	115	20	12	04	975
Reptiles	195	33	---	04	02	222
Total	1741	258	39	56	10	1972

2012- 13

Types	Stock as on 01.04.2012	Birth	Acquisition/ procurement	Death	Disposal	Stock as on 31.03.2013
Mammals	775	54	33	18	04	840
Birds	975	82	13	09	--	1061
Reptiles	222	30	02	02	--	252
Total	1972	166	48	29	04	2153

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

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

Year	Total stock As on 1 st April	Number of deaths					percentage
		Mammals	Birds	Reptiles	Amphibians	Total	
2012-13	2153	18	09	02	-	29	1.33%
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%

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.

- **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 2016-17 is as follows-

Month-wise production of fodder from the captive fodder farm (in quintal) for the year 2016-17

Month	Para grass	Hybrid Napier (NB-21) grass	Common grass	Sorghum grass	Oat grass	Cowpea	Humidcola	Berseem	Total
04/2016	309.15	66.80	445.44	50.20	-	32.00	-	-	903.59
05/2016	273.98	62.00	429.66	125.30	-	62.00	-	-	952.94
06/2016	307.90	60.00	409.70	63.70	-	60.00	-	-	901.30
07/2016	317.63	64.35	423.175	59.40	-	62.00	-	-	926.555
08/2016	316.33	63.55	494.155	58.90	-	2.00	-	-	934.935
09/2016	300.50	61.50	538.55	-	-	-	-	-	900.55
10/2016	298.13	63.55	576.755	-	-	-	-	-	938.435
11/2016	282.90	61.10	552.75	-	-	-	-	-	896.75
12/2016	292.33	63.55	570.775	-			6.20	-	932.855
01/2017	240.33	9.55	561.175	-	110.00	-	6.20	-	927.255
02/2017	208.04	1.50	507.90		112.00		5.60	8.00	843.04
03/2017	273.88	1.55	509.175	-	80.00	52.00	6.20	10.00	932.805
04/2017	231.385	1.50	525.645		64.00	82.00	6.20		910.73
TOTAL	3652.485	580.50	6544.855	357.50	3.66	3.52	30.4	18.00	11901.44

The total production of fodder in the fodder farm during the year 2016-17 was **11901.44** 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 154 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, Ripe 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. To ensure optimal outcomes collaboration with the number of organized institutions was given priority. The research teams are made up of Orissa Veterinary College, zoo vets, collaborating scientists and students of graduate, masters and PhD levels. Funding for research is provided by CZA. The research findings would further increase our expertise in the 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 Orissa. 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 center'. The significant achievement of the project is the birth of three pangolin babies during these two years of research. Moreover, the study is being carried out under the CCTV cameras installed inside the enclosures which can capture the activities in the form of videos during the night time also. Monitoring through the infrared sensitive CCTV cameras unfolds the secrets of the life of the pangolins. Now, it is convenient to record and understand the basic needs and activities of the pangolins in captivity.
- (b) **Conservation Breeding of White-backed vultures:** Nandankanan is among the six participating zoos for the conservation breeding of White-backed vulture identified by CZA. With the financial support from Central Zoo Authority. A conservation breeding centre for white backed vultures has been constructed during the year 2011-12 in an off-exhibit area of Nandankanan over an area of 0.3 acres of enclosed area surrounded by about seven acres of forested area. The breeding centre has been developed as a satellite campus with all the basic facilities. Two nursery aviaries (10 X 12 X 8 ft.) and one colony aviary (100 X 40 X 20 ft.) have been constructed for the said purpose. Central Zoo Authority has directed the Authority of Gandhi Zoological Park, Gwalior to shift 12 rescued Long billed Vultures housed at Gandhi Zoological Park, Gwalior to Nandankanan Biological Park. We are in touch with authority of Gandhi Zoological Park, Gwalior for shifting of Long billed Vultures to Nandankanan.

- (c) **Establishment of the laboratory-** Wildlife forensics is an emerging field having an assemblage of different governmental, legal and scientific experts which works to link the suspect, victim and crime scene with physical as well as biological evidences in wildlife offence cases. A wildlife forensic laboratory was constructed in Nandankanan Zoological Park with objective for scientific investigation of wildlife crime, identification of the species, to establish a reference sample repository of the species and submission of report for necessary investigation. Necessary laboratory equipments have been purchased under CAMPA fund during the year.

Zoo education program

Around 3.2 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.

Date	Programme	Number of participants
16.05.2016	Orientation meeting for zoo guides of Nandankanan	56
29.07.2016	Observation of International Tiger Day at Nandankanan	>100
12.08.2016	Celebration of World Elephant Day	>200
25.10.2016- 28.10.2016	Field training programme of B.Sc. Forestry students of OUAT, Bhubaneswar	25
03.10.2016	Quiz competition on the eve of Wildlife week	30
09.11.2016	Orientation tour programme of Forest Range Officer trainees from Assam	29
05.11.2016	Sensitization programme on Avian influenza for Nandankanan staff	30
29.11.2016	Orientation tour of Forest officers of West Bengal	25
06-07.12.2016	Training programme for tranquilization techniques for forest personnel of Chhattisgarh state	30
25.01.2017	Orientation tour of frontline staff of Assam forest Department, Assam	25
24.02.2014	Orientation visit of Zoology Honours student of Rajdhani College, Bhubaneswar	10
25.02.2017	Orientation visit of Bachelor degree students of Xavier University, Bhubaneswar	70
17.01.2017	East India exposure visit of Officer trainees of SFS batch of ASFOS, Assam	34
07.02.2017	Exposure tour of Forest Rangers trainee, Kurseong, West Bengal	37
19.03.2017	Orientation tour of officer trainees of Central Academy for State Forest Service, Coimbatore	38

04.03.2017	Exposure tour of 40 participants from 29 countries of an International training programme on Environmental Audit	40
03.03.2017	Celebration of World Wildlife Day	>100
08.03.2017	Orientation programme of B.V.Sc students of OUAT, Bhubaneswar (1 st Batch)	30
17.03.2017	Orientation programme of B.V.Sc students of OUAT, Bhubaneswar (2 nd Batch)	30
19-20.03.2017	Training programme on Tranquilization Techniques for frontline staff of Odisha Forest Department	28

Wildlife Week Celebration

61th Wildlife Week was celebrated in a grand manner in the zoo from 2nd October, 2016 to 8th October, 2016 with display of banners, educating school children on wildlife conservation. More than 3000 school children had free entry into the Zoological Park during the Wildlife Week. Sit & draw, quiz competitions 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, 2016 in the presence of Sri Sidhanta Das, IFS, Principal Chief Conservator of Forests (Wildlife) & Chief Wildlife Warden, Odisha, Bhubaneswar. The celebration was observed with a mass awareness programme amongst more than 200 visitors with a message for elephant conservation. 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. A meeting was convened to distribute prizes to the winners of the quiz and sit & draw competition. To-day one lioness was exhibited to visitors by the Chief Wildlife Warden, Odisha the lioness was named 'Kalpana' by the visitors.

Foundation Day celebration

56th Foundation Day of Nandankanan was celebrated on 29.12.2016 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 2015-16, 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. To-day the renovated Hynea enclosure was inaugurated, the wild tiger 'Nandan', and the tigress 'Megha' with her two male cubs were exhibited to visitors.

Celebration of World Wetlands Day

World Wetland Day was celebrated on 2nd February, 2017 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. Director, Nandankanan Biological Park graced the occasion and addressed the gathering about importance of wetlands and need to protect and manage those ecosystems.

Celebration of world pangolin day

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.
- (g) 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 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.
- Wonderful site for wildlife conservation and education where one can experience integration of ex-situ and in-situ conservation of wild fauna and flora.
- Presence of Kanjia Lake- A wetland of National Importance (2006)
- Conservation Breeding Centre for Indian Pangolin and White backed vultures.
- Nandankanan has largest enclosures for housing Gharials and Hippopotamus.
- Second largest heronry for open billed storks (more than 12,000) 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”.

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 8.00 AM to 5.00 PM (October to March) during winter.

ENTRY FEE & OTHER CHARGES

<u>BOTANICAL GARDEN</u> Children upto 12 years- Free Adult – Rs.10/- Two wheeler- Rs.30/- Three wheeler- Rs.30/- Four wheeler- Rs. 100/- Heavy vehicle- Rs.200/- <u>Picnic spot</u> 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.3000.00+ Rs. 100/- Service charges FRH-I-(Suit-II)- Rs.2500.00+ Rs. 100/-Service charges FRH-II- Rs.2500.00+Rs. 100/-Service charges Holiday Cottage- (ground floor) Rs.2500.00+ Rs. 100/-Service charges Holiday Cottage- (first floor) Rs.2500.00+ Rs. 100/-Service charges Special picnic pindies – Rs. 1500/- + Rs. 100/- (Service charges) each
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INFRASTRUCTURE

The Botanical Garden covers 21 different theme based gardens spread all over undulating landscapes mixed with natural vegetation and meadows. The following important facilities are available in the State Botanical Garden at Nandankanan.

Glass house:

A spacious glass house of 2013 sqft. Has been developed for housing succulent plants. A state of art green house of 5200 sqft. Houses the cultivars of 60 species of indoor plants like Aglaonema, Philodendron, Calathea, Cordyline, Dffenbachia, Spathiphyllum, Peperomia, Monstera, Hemigraphis, Asplenium etc.

The Cacti House

A 1080 sqft polyhouse houses of important species of cacti and succulents and a glass house of 2013 sqft. Displays many species of indoor plants.

Bonsai

A rich collection of more than 400 Bonsai plants are available adjoining to the Glass house.

Children Park

A niche for the kids has been created within the natural setting by providing swings, merry-go-round, sliding chute etc.

Artificial Zoo

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

Nursery

A well equipped nursery exists in the garden for production of different seedlings and to accommodate the plants for display and sale. It is having a captive vermin compost unit.

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.

Carnivorous plant garden

Nandankanan Biological Park is first to exhibit carnivorous plants among the Indian zoos. This project was started during the month of September, 2015 and completed during the month of March, 2016. The garden has been established to accommodate different species of carnivorous plants (e.g. *Sarracenia*, *Drosera*, *Nepenthes*, *Dionaea*) with provision of naturalistic landscape with appropriate signage. The exhibit will promote education and awareness among the visitors about habitats of carnivorous plants and their conservation.

Visitor Amenities

Visitors amenities like toilets, sit-outs, drinking water, plant sale centre, information centre, cottage, picnic sites are available inside State Botanical Garden.

GARDENS

Rosarium

It is one of the richest collection of 1000 rose plants belonging to 55 varieties, grown over an area of 1.5 ac. of land.

Medicinal Garden: A well laid medicinal garden spread over an area of 2.26 ac. Which displays rich collection of 200 species of medicinal trees, shrubs and herbs.

Japanese Garden: A state of art Japanese garden in Tsukiyama-niwa style with flowing streams and other typical features is a star attraction.

Landscape Garden: It is a model of landscaping having different elements like lawn, trees and shrubs spread over an area of 11 acres. 1000 trees of different species have been planted to maintain the rhythm.

Orchid House

The largest orchid house of the State spreads over 5000 sqft. And displays more than 1000 orchid plants of 57 varieties belonging to 37 species. One can enjoy the orchids in bloom round the year displaying various colour of nature.

Evolution garden

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

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 side give a look of gardens of mughal era. The garden is liked by mostly the young people and has maximum foot flow during winter.

Arboretum

The arboretum spread over an area of 4 ha., has been established with a collection of more than 200 species (from 49 families of plants) found in the eastern zone forests. A minimum of 10 nos. of each species has been planted with signages displayed. A network of path has been made through the plantation which will be a ideal walkway for botanization for the trainees and students.

Butterfly Park

Butterfly park, an interesting option among visitors has been developed over an area of 36,590 sqft. The garden has an unique landscape with 6400 butterfly dependant plants. The garden has one cascading waterfall with 170 rft flowing water channel, fountains and artistic bridges. One can sight more than 42 species of butterflies 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.

Palm Garden

Palm garden is an amazing site to see varieties of common and rare palms. A collection of 26 varieties of beautiful palms have been planted over an area of 15,000 sft .One designed water body along with 15000 sft grass carpets have also been developed inside the palm garden for public amusement. The palm garden has been established in March, 2014.

Bougainvillea garden

One Bougainvillea garden has been developed over an area of 21,400 sft inside the State botanical garden. More than 1,000 bougainvillea plants of different colors (7 varieties) have been displayed in the garden. A series of creepers raised on the back of the garden adds beauty to the park which was established in July, 2013.

Dry garden

A garden of xerophytes 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.

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.

Visitor flow & revenue generated during last five years

Year	No. of visitors	Total Revenue collected (Rs. In lakh)
2012-2013	1,11,180	16.57
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

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