

Annual Report

2014-15

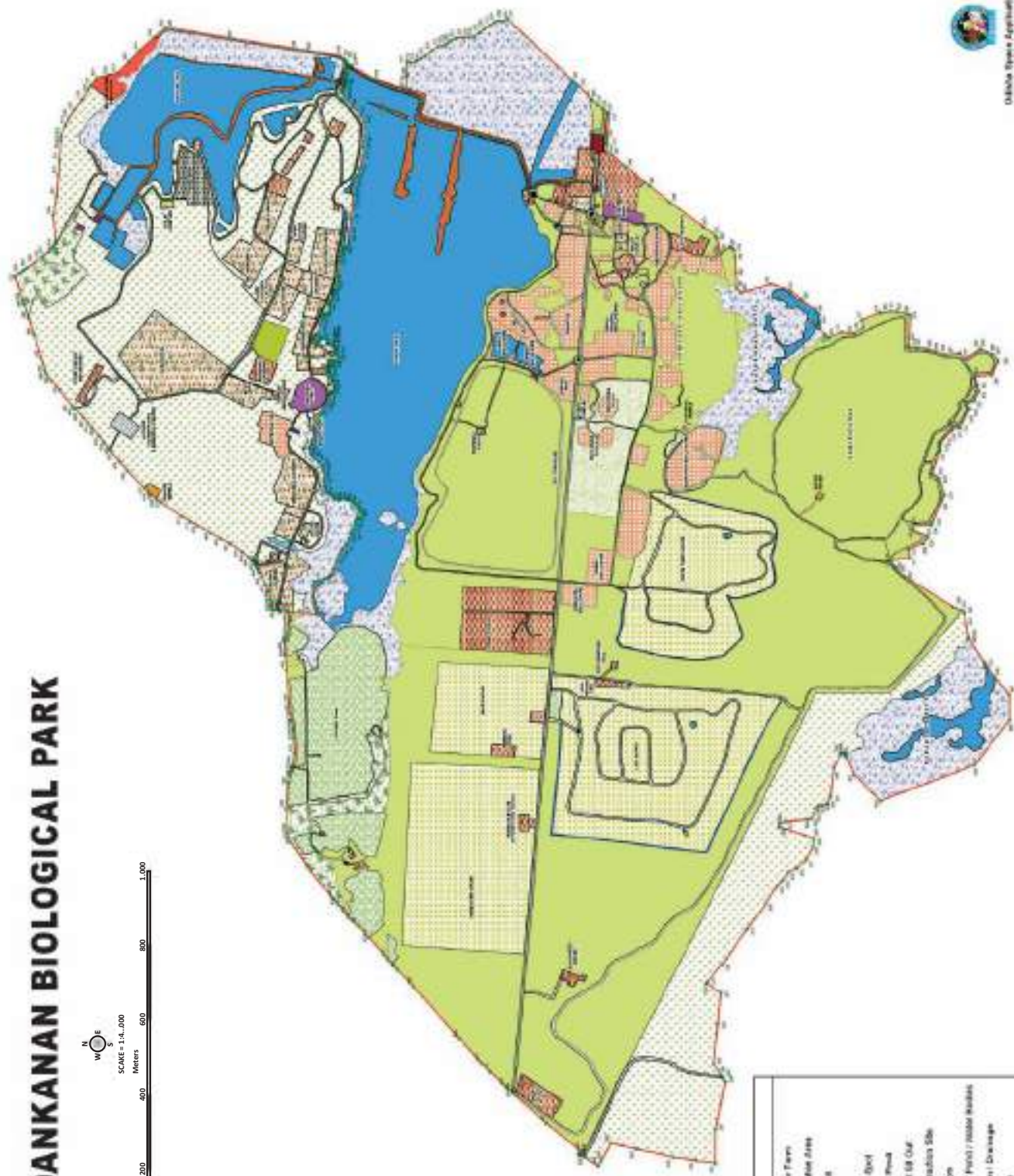


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NANDANKANAN
The Paradise on Earth

MAP OF NANDANKANAN BIOLOGICAL PARK



LEGEND

Born-Up Area	Public Farm
Disrupted Habitat	Recreation Area
Designated House	Quarry
Pump House	Park
Water Tank	Private Road
Solid Complex	Private Road
Major Road	Tourist Site
Other Road	Construction Site
Handicraft	Market
Wet Trail Line	Lake / Pond / Water Feature
Canal	Stadium / Drainage
Enclosure (Animal / Plant)	Bridge
Green Area	Marsh / Swampy Area
Other Boundary	Settlement
Zoo Area	Temple
Sanitary Area	

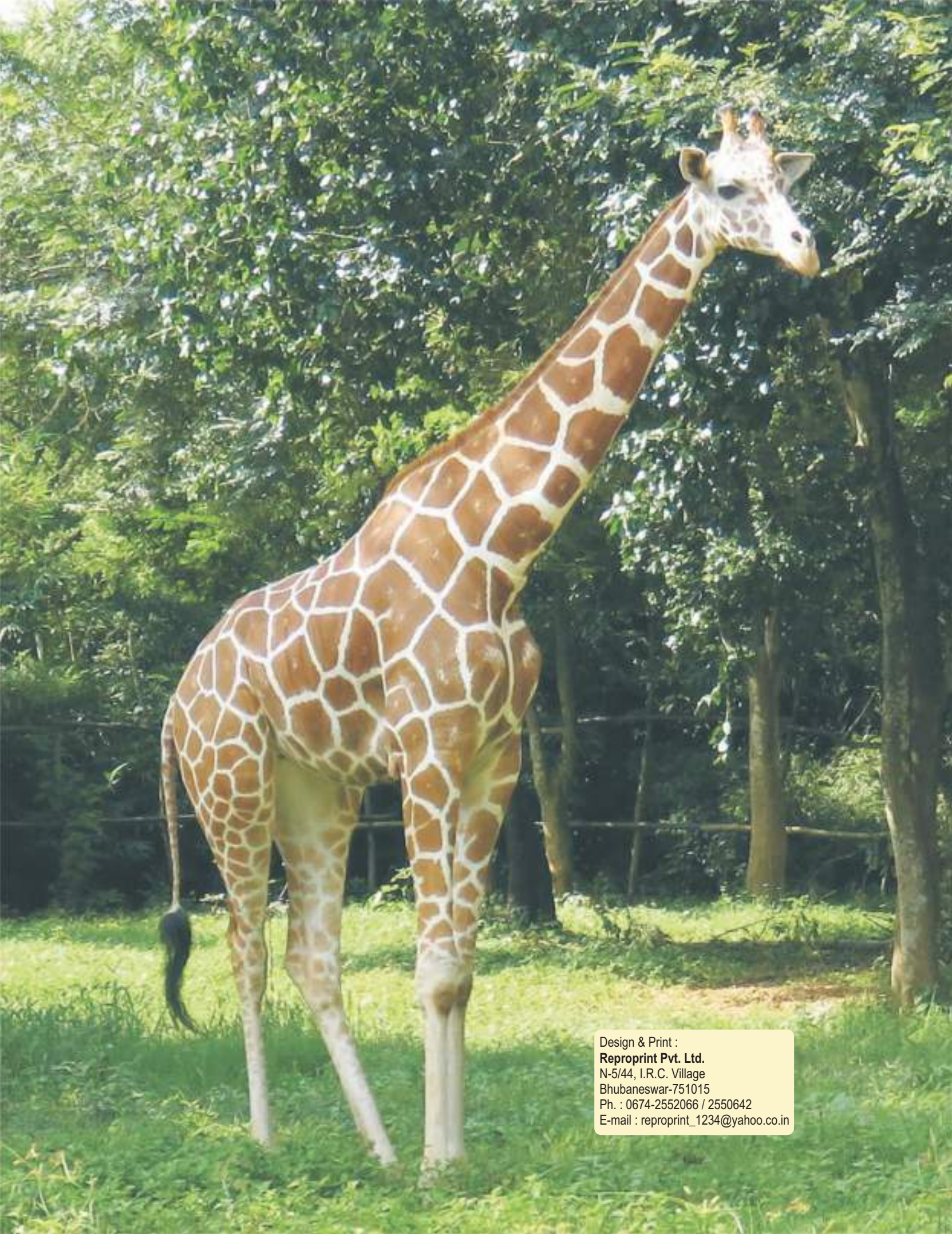


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Nandankanan Zoological Park
Bhubaneswar



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From Director's Desk

Nandankanan Zoological Park is a premier large zoo of India located amidst natural forests spreading over an area of 3.62 sq km. Established on 29th December 1960, it started its humble beginning with few animals. 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. Over the years, Nandankanan has emerged as an eminent and vibrant centre for biodiversity conservation and environmental education. 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.

Nandankanan epitomizes the unique integration of in-situ and ex-situ conservation initiatives. The sprawling zoo houses 149 species of amphibians, reptiles, birds and mammals. The natural forest areas of Nandankanan provide 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 from August, 2006. This is one of the most important plant conservation facility in the State. More than 704 species of plants have been documented in the State Botanical Garden. Nandankanan also has two important wetlands namely Kanjia lake (66 ha) and Kiakani lake. The former has been included in the list of wetlands of national importance by the Ministry of Environment, Forests and Climate Change, Government of India in the year 2006 due to its rich biodiversity.

We have completed another outstanding year of biodiversity conservation, zoo management, research & education. Nandankanan has been an excellent place for eco-tourism which attracted more than 2.9 million visitors during the year 2014-15 in spite of occurrence of the cyclone 'Hud Hud' during October, 2014. There was significant improvement in the infrastructure development, animal collection, health care, fodder production and conservation research. Many zoo education and awareness programmes including Celebration of Wildlife Week, Elephant Day, World Wetlands Day, Foundation Day etc. were organized during the year 2014-15. Many species of wild animals including tiger, four-horned antelope, sambar, hog deer, Indian hare, Indian pangolin, marmoset, grey pelican, white ibis, Night heron, pariah kite, hippopotamus, gharials, flap shelled turtle etc. have bred successfully in the Park during the year. One rescued leopard cub from Bolangir and one orphan zoo born marmoset baby were successfully hand-reared in Nandankanan during 2014-15.

The establishment of new enclosures including walk through aviary, open-top leopard enclosure and new aviaries were the land-mark developments in the Zoological Park during the year 2014-15. The animal enclosures have been progressively designed to create conditions simulating the natural environment.

Birth of melanistic tigers at Nandankanan was one of the significant events that happened during the year 2014-15. On 28.07.2014, the tigresses 'Sneha' gave birth to four cubs including two melanistic cubs. There were reports of presence of melanistic tigers in the forest of Similipal, Odisha. This is the first incidence of birth of melanistic tigers in captivity in the world.

The Government of India and the State Government accorded permission during September, 2014 to house the strayed wild tiger "Nandan" in Nandankanan Zoological Park. It is interesting to note that the said tiger strayed into the forests of Nandankanan Sanctuary in March 2013 and eventually housed in an enclosure from which he escaped by scaling the 18 ft high wire mesh fence. After few weeks of wandering in the natural forest of Nandankanan, the said tiger again entered into the Tiger Safari and thereafter was kept in an enclosure with covered top. Nandankanan is the only place in the world for attracting wild tiger due to presence of adequate prey base, perennial water source, good forest cover and protection.

An adult wild Makhna (tusk less male) strayed into Nandankanan in December, 2014 from adjoining Chandaka sanctuary. Subsequently the Makhna was shifted and released into the wild inside the deep forest of Kumarkhunti area of Chandaka Wildlife Sanctuary.

A dedicated zoo veterinary hospital with full time veterinary surgeons, well equipped operation theatre, isolation ward, quarantine ward, microbiological laboratory and incubation unit provides proper health care to the captive animals. Sincere efforts were taken during the year 2014-15 in the field of animal health care in order to maintain the highest standard in the animal husbandry practices. This was possible due to the 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 average mortality of the captive animals during the year 2014-15 was observed to be 2.03% due to intensive health care and preventive actions.

The Zoological Park has always been an outstanding centre for conservation, education and research. Eight research papers were published during the year in different national and international journals on various aspects of ex-situ conservation, breeding, health care and management of captive wild animals. Research activities on Indian Pangolins have also been carried under the financial assistance from Central Zoo Authority.

The annual report provides useful information on various aspects of management and development of Nandankanan during the year 2014-15. I hope, the exciting relationship between the visitors and wildlife will be further strengthened in the future years to come. I sincerely believe that during the coming years, Nandankanan will continue to grow as a world class zoo and to contribute significantly in the field of wildlife conservation, education and research.

Dr. S. Panda, IFS

DIRECTOR

Nandankanan Biological Park





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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 in India 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 2.9 million tourists visited the Zoological Park during 2014-15. 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	-	362.1 ha. (3.62 Sq.Km.)
	(includes Kanjia lake of 66.1 ha.)		
	Nandankanan Wildlife Sanctuary	-	437 ha. (4.37 Sq.Km.)
Captive animals and birds as on 31.03.2014	Mammals	39	917
	Birds	79	1375
	Reptiles	25	242
	Amphibians	06	21
	TOTAL	149	2555
No. of animal House	202 nos. (covered - 108, 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.



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.



White tiger safari

A unique white tiger safari established on 1st October, 1991 over an area of 12 ha in a natural surroundings. It provides 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.



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. The entrance gate has been specially designed for delight of the visitors.



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. The facility is currently under renovation for enlarging the area and improving the viewing conditions.

Reptile Park

A reptile park, with a life size Tyrannosaurus at its entrance with an interpretation centre houses 24 species of reptiles including crocodiles, lizards, turtles and snakes. One would encounter crocodiles, king cobras and a huge reticulated python inside the reptile park. Many rare and endangered reptile species are displayed in the facility.



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. Display signages highlighting the importance of reptiles and their diversity in Odisha provide useful information to the visitors.

Toy Train

The toy train has been a great attraction for the children. Its starts from the toy train station and 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.





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.



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.



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.



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.



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



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 along 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.



Walkthrough aviary

The walkthrough aviary for exotic birds is an 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. It has 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 comprise of arboreal, terrestrial and aquatic birds. It is a visitor's delight to view the free flying birds over head.



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

ENTRY FEES AND OTHER CHARGES

Entry Fee:

Indians (Above 12 years)	- Rs.20/-
Children Age group of 3-12	- Rs. 5/-
Foreign visitor	- Rs.100/-
Differently able persons	- FREE.
& Children below 3 years	- Rs.200 & 300/-
Tourist Cottage	- Rs.5/-
Film Still Camera	- Rs. 10/-
Digital Still Camera	- Rs.100/-
Handy cam camera	- Rs.500/-
High end Video Camera (Amateur Photographer)	- Rs.4,000/-
Movie Camera(Professional Photographers)	

Safari

Lion safari & White tiger safari	- Rs. 30/-
Herbivore safari	- Rs.10/-
Bear safari-	- Rs. 10/-
Toy Train	- Rs.10/-

Aquarium-

Adult	- Rs.10/-
Children	- Rs.5/-

Boating (for 30 minutes)

Paddle Boat (2 seater)	- Rs.25/-
(4 seater)	- Rs.50/-

Family boat

Wheel chair for differently able persons	- Rs.100/-
Perambulator for children	- Free
Battery Operated Vehicle	- Rs.2/- per hour
	- Rs. 50/ person



Monthwise number of visitors during 2014-15

Month	No. of visitors	Month	No. of visitors
April	1,40,609	October	3,03,149
May	1,55,210	November	2,31,391
June	1,96,607	December	4,03,434
July	1,57,115	January	4,08,675
August	1,97,460	February	2,87,877
September	1,54,265	March	2,64,249
Free entry of school children Wildlife Week & Children's Day			2,325
Free entry of differently abled persons			2,409
TOTAL			29,04,775



Human Resource

(A) Sanctioned strength and present staff position:

Sl. No.	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.	Deputy Ranger	1	-	1
8.	Forester	9	2	7
9.	Forest Guard	25	16	9
10.	F.E.S.	1	-	1
11.	Head Clerk	1	1	-
12.	Junior Accountant	1	-	1
13.	Jr. Stenographer	1	1	-
14.	Senior Clerk	4	3	1
15.	Junior Clerk	4	3	1
16.	Driver (L.V.)	4	2	2
17.	Driver (H.V.)	3	3	-
18.	Fitter -cum -Mechanic	1	-	1
19.	Engine Driver	1	-	1
20.	Livestock Inspector	3	2	1
21.	Guide	1	-	1
22.	Projector operator	1	-	1
23.	Booking Clerk	3	3	-
24.	Artist -cum -Modeler	1	1	-
25.	Junior Librarian	1	1	-
26.	Khansama	1	1	-
27.	Gangman	2	-	2
28.	Sweeper	10	9	1
29.	Animal Keeper	25	23	2
30.	Office Peon	1	1	-
31.	Mate	2	1	1
32.	Mahout	3	3	-
33.	Mali	5	4	1
34.	Watchman	7	6	1
35.	Boatman	2	1	1
36.	Ticket Collector	2	1	1
37.	Zoo Watcher	6	4	2
38.	Bungalow Chowkidar	3	1	2
39.	Winch Operator	1	1	-
40.	Cook -cum -Animal feed Distributor	1	-	1
41.	Welder -cum -Blacksmith	1	-	1
Total		151	107	44

(B) 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
Total strength of Nandankanan Zoological Park including Director's office		167	118	49

Human Resource Development

(A) Training programmes:

(1) Tranquilization Training of field staff:

A training programme on tranquilization with hands on practice was conducted at Nandankanan on 17th & 18th November, 2014. The training was attended by 25 field staff from Bhubaneswar, Angul, Sambalpur, Baripada, Rourkela, Berhampur, Bhawanipatna circles and Nandankanan including 3 Range Officers, 11 Foresters and 11 Forest Guards.

(2) Training of Zoo Keepers:

A Training programme was organized for Zoo Keepers at Nandankanan on "Biodiversity Conservation" during 10th November, 2014 to 15th November, 2014. Twenty two (22) participants from 16 zoos of 4 states (Jharkhand, Bihar, Chhatisgarh & Odisha) participated in the training programme. The Training programme was sponsored by Central Zoo Authority.

(3) Workshop/Training Programme attended:

- Dr. Sarat Kumar Sahu, Veterinary Assistant Surgeon, Nandankanan Zoological Park and Sri Rajesh Kumar Mohapatra, Biologist, Nandankanan Zoological Park attended Workshop on Reproduction and Welfare of Endangered Animals in Conservation Breeding at Laboratory for Conservation of Endangered Species (LaCONES), Hyderabad from 28th to 30th January, 2015.

(B) Exposure visit:

- A team of six persons namely Sri R.K. Behera, Forester, Purna Ch. Behera, Forest Guard, Satyanarayan Behera, Winch Operator, Nilambar Acharya Sharma, TS, Niranjana Gouda, TS and Trailokya Maharana, EPF worker visited Nehru Zoological Park, Hyderabad, Andhra Pradesh from 10.03.2015 to 15.03.2015 on exposure visit.



FINANCE

An amount of Rs. 716.86 lakhs was generated towards revenue from all sources during 2014-15.



Visitor flow and revenue generated during the year 2014-15

Item	Visitors number	Revenue (in rupees)
Common visitors (Above 12 years)	24,30,863	4,86,17,260
Children (3 to 12 years)	4,29,711	21,48,555
School children	38,351	1,91,755
Foreign visitors	1,116	1,11,600
Free entry during Wildlife Week and Childrens' Day	2,325	0
Free entry of disabled persons	2,409	0
Still camera	3,417	17,085
Digital camera	93,219	9,32,190
Handycam	2,376	2,37,600
Video camera	2	1,000
Tourist cottage		9,800
O.T.D.C.		71,500
O.T.D.C. snacks bar		45,000
Weighing machine		24,192
Cloak room		10,280
Rent of Boating facilities		6,66,600
Rent of Parking Place		39,45,774
Rent of Toy Train facility		3,12,750
Rent of safari facility		75,53,051
Rent of Aquarium facility		14,15,680
Rent of BOV facility		31,93,245
Revenue collected at Botanical garden		20,62,625
Misc. revenue		25,500
Sale of waste cattle bones		27,086
Rent of ATM counter		55,000
Forfeited EMD amount		1,65,814
Division Office		30,000
Walk Through Aviary		15,525
Total revenue collected		7,16,86,467

Revenue generated during last five years

Visitor flow during last five years		
Year	No. of visitors (in lakh)	Total Revenue collected (Rs. in lakh)
2009-2010	21.291	361.05
2010-2011	24.015	527.07
2011-2012	24.690	569.04
2012-2013	29.059	645.22
2013-2014	27.615*	664.49
2014-2015	29.047	716.86

* The visitor flow was reduced due to very severe cyclonic storm "Phailin" during October, 2013.

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

Year	Allotment and Expenditure	Non - Plan	State- Plan	Central Plan	Centrally sponsored plan	CZA grant	CAMPA	Society Fund	Tourism Deptt.	Total
1	2	3	4	5	6	7	8	10	11	12
2009-10	Allotment Expenditure	440.00 440.00	200.10 200.10	5.00 5.00	7.10 7.10	- -	- -	116.87 112.14	37.62 37.62	806.69 801.96
2010-11	Allotment Expenditure	455.97 441.88	572.20 452.45	5.50 5.50	5.702 5.702	13.80 12.80	94.38 73.38	191.00 112.56	- -	1338.55 1104.27
2011-12	Allotment Expenditure	475.64 471.00	631.95 603.95	2.00 2.00	8.80 8.80	37.40 37.40	52.00 52.00	373.77 255.66	- -	1553.56 1430.81
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

Exchange of Animals :

Arrival of new animals from different zoos under animal exchange programme (2014-15).

Name of the zoo	Date	Animals brought	Animals sent
Bannerghatta Biological Park, Bangalore	01.09.2014	Lion- 2:2	Four Horned Antelope- 1:2 Jungle Cat - 2:2 Barking Deer - 4:4 Openbill Stork- 0:0:4

Notable births:

Peafowl, Black kite, White Ibis, Night Heron, White Ibis, Grey Pelican, Four horned antelope, Hog Deer, Sambar, Marmoset, Siamese Crocodile, Star tortoise, Tiger, Hippopotamus, Gharial, and Star Tortoise.

New arrivals:

Sun Conure, Pine apple Conure, Yellow sided Conure, Mandarin Duck, Emu, Ostrich, Lady Amhersts Pheasant, Golden Pheasant, African Grey Parrot, Reev's Pheasant, Ring necked Pheasant, Violet Turaco, Living Stone Turaco, Black Swan, Mute Swan, Swainson Lorry and Blue faced lorry.

Successful rearing

Two sloth bear cubs and one leopard cub from different Divisions of the State have been successfully reared in the Zoological Park. One zoo born marmoset was also hand reared during the year by the dedicated zoo staff.

Management during cyclone “Hud Hud” (12th October, 2014)

A detail contingency plan was prepared to deal with the cyclone 'Hud Hud'. Our learning from the Super cyclone during October, 1999 and Phailin in October, 2013 helped a lot in dealing with the protection mechanism for captive animals during cyclone. A fifteen member rapid response team under the leadership of the Assistant Director, Nandankanan was constituted to meet any exigencies anticipating the cyclone 'Hud Hud' on 12th October, 2014. All the animals wherever possible were confined within the feeding

cells from 11th afternoon. Specific feed such as tree termite eggs, tree fodder, common grass, fish etc. were procured and stored suitably for consecutive three days. Fuel and lubricants were stored in advance for smooth running of vehicles, Gen sets and other electrical installations. The power chain saws, axes, billhooks were stored in convenient places to clear the roads by cutting the uprooted tree if any. But cyclone 'Hud Hud' was not severe and no damage was caused to the facilities. There was no casualty of any zoo animal.

Important happenings during the year:

1. Birth of Melanistic tigers

On 28.07.2014 the tigresses 'Sneha' gave birth to four cubs including two melanistic tigers. The father of the cubs is a zoo born tiger named Manish. Four cubs namely, Krishna (melanistic male cub), Subhranshu (white coloured male cub with melanistic stripes), Snehashis (normal coloured male cub) and Aninee (normal coloured female cub) have been the main attractions for the visitors. There were reports of presence of melanistic tigers in the forest of Similipal Tiger Reserve, Odisha. This is the first incidence of birth of melanistic tiger in captivity in the world.

2. Nandankanan attracted wild elephants

On 29.12.2014 an adult wild Makhna (tusk less male) strayed into the elephant safari enclosure by breaking the enclosure wall. It had also injured one of the female captive elephants housed there. The elephant was driven out by means of fire crackers and drum beats. Though the elephant went away, it returned in a night after 3 days

and further injured the same female captive elephant. As the Makhna became a threat to the zoo housed animals as well as to the visitors, he was tranquilized and shifted to Chandaka Wildlife Sanctuary on 05.01.2015. The elephant was released inside the deep natural forest, of Kumarkhunti.

3. Wild Tiger became member of the Zoo Animals

On 24.03.2013 one adult male tiger strayed into the forests of Nandankanan Sanctuary in the month of March 2013. This was one of the significant events in the history of zoos in the World where a wild tiger was attracted to a small patch of forest having adequate prey base and plenty of natural water sources. On 30.04.2013 the tiger was allowed to enter into the white tiger safari area through its

emergency gate. It was decided to shift the tiger to adjacent enclosure to facilitate health check up and management of the tiger. On confinement inside the enclosure on 31.05.2013, the tiger scaled up 18ft high wiremesh enclosure and escaped into the forest of Nandankanan sanctuary. Thereafter, the tiger found visiting near other captive tiger enclosures and fighting with them from outside the chain link mesh in June, 2013. The strayed wild tiger was again confined in the white tiger safari on 23.06.2013 and to the top covered enclosure on 07.07.2013. Eventually the tiger named 'Nandan' was kept at Nandankanan Zoological Park for use in conservation breeding program in accordance with the order of NTCA and instruction issued thorough letter No. 17230/F&E dated 19.09.2014 of Government of Odisha.

Animals under Adoption (2014-15)

Sl. No.	Name of the persons/Institution	Animals/birds adopted	Period of Adoption
1.	Mr. Jogesh Chandra Sahu, State Bank of India, SME Branch, Bisra Chowk, Rourkela	Seven Alexandrine Parakeets	February, 2012 to February, 2014
2.	M/s R. G itan Jali, C/o - Usha Ramamurthy, 694/Sector - 9. Farodanad, Haryana	One Brahminy kite	24 th September, 2013 to 23 rd August, 2014
3.	Lakshmi, C/o -T.K. Narayanan, Ohio, USA	One tiger	February, 2013 to January, 2015
4.	Miss Aakshi Anita Sinha Roy & Mrs. Bonhi Sinha Roy, Data Search India, Kolkata	One black buck	September, 2013 to August, 2014
5.	Sri Sujay Tripathy, Plot No. 108, Nayapalli, Bhubaneswar	Two White Chinese Dove	Mach, 2014 to February, 2015
6.	Sri Trinath Nayak, Arapur, P.O.-Dolanapur, Banki, Cuttack	One Love Bird	20 th February, 2014 to 19 th January, 2015
7.	The Chairman, Womens Forum YMCA, Old Secretariate Road, Buxi Bazar, Cuttack	One Yellow Backed Lorry	2 nd March, 2015 to 29 th February, 2016



Impression of Our Esteemed Guests

"In our visit to the Nandankanan Zoological Park we were able to see the most exotic animals of mother nature. The famous White Tiger was a delight to watch. We were also pleased to see the well maintained aquarium and the reptile house. Meeting the baby elephants made our day. We were given everything that this amazing park promised. Thank you and keep up the good work".

Justice R.K. Garg,
Punjab & Haryana High Court
Chandigarh- 08.04.2014

"Today we got an opportunity to visit Nandankanan- developed and maintained by the forest department. Such park cannot be developed without vision and dedicated efforts of the officers and staff attached and working with it. Nandankanan is one of the finest large zoos of the country. Our best wishes to all the concerned to achieve the mission of having distinction of an outstanding zoo through world class conservation, education, research and exciting visitor experiences by connecting people to biodiversity conservation. It's wonderful experience to describe in limited words.... keep it up".

Justice Pradeep P. Bhatt
Jharkhand High Court
Ranchi-12.04.2014

"It was a pleasant experience. Had the occasion to see animals which were different from other zoo. Very well maintained. The staff was also very courteous. Over all, very nice, magnificent and excellent visit. Thanks".

Justice Ajay Kumar Mittal
Judge Punjab & Haryana High Court
Chandigarh- 17.04.2014

"Today I experienced something unique in Nandankanan zoo. Mr. Purohit, Asst. Director gave very good company and elaborately explained the rearing and breeding of different animals. Myself, my wife and my other friends thoroughly enjoyed the total environment and life different animals. Really a good outing. Animals are getting enough place to live in. if appears to be a very natured living".

Justice B.L. Sah
Orissa High Court
07.09.2014

"Visited the Zoological Park with my wife after a long gap of 13 years. Although, it is my second visit, I feel that I have been associated with this great institution for decades as I have great admiration of the finest forest officers managing the Zoological Park for a long period. During the present visit, I could see a lot of developments taking place which would give an excellent dimension to this professionally managed facility. The new and unique innovative steps- new panther enclosure, breeding of ant-eater, walk-in-Aviary are worth mentioning. I am sure that the interventions being made by the present management led by Mr. Sudarshan Panda, the Director of

the Park will enhance the professionalism of the management of the park. Young officials like Manoj Nair will be supporting all the steps being initiated towards the development of the park. I wish the Zoological Park grows as the finest captive facility accomplishing the objectives of the zoos set forth in the Indian Zoo policy. I wish I would come back and visit the park again".

C.S. Yalakki
Addl. PCCF (Vigilance), Kerala

"Revisited after 14 years. Great to see the animals and upkeep. Please keep it up and thanks.".

U. Anand
Former Secretary,
Ministry of Environment & Forests
Govt. of India.

"Came here today with my family almost after 20 years. The way this place has been developed and maintained is beyond imagination. A good part of the zoo almost looks like natural habitat of the wild. Great environment, lot of greeneries, well maintained animals in captivity and the friendly staff deserve compliments from all of us. Mr. Manoj V. Nair, DD deserves to be congratulated for his personal efforts on the zoo management and his insight into the animal Kingdom. Seeing is believing. I am sure this place will always remain a favourite spot for all animal lovers".

Ansuman Das
CMD, NALCO- 28.09.2014

"A must see place. Self maintained park, full different variety of animals, birds, reptiles specially children will love to see them. I recommend at least one time visit to this place".

Justice J.Dinesh Gupta
Allahabad High Court
01.10.2014

"A natural gift, wonderful place, I can't explain in words, really an amazing experience. My heartfelt compliments to the staff, Director".

Justice Ravi Verma
Jharkhand High Court

"One of the best zoos of India specially for white tigers. Well managed, technical knowledge, skill of staff is excellent. I have seen some enclosures which are example of skill and management of wildlife. All the best for future management. Keep it up".

J.B. Jauher, IFS (Rtd)
Ex-PCCF, Jharkhand
16.11.2014

"Came to Nandankanan after few years alongwith four of my relatives. Nandankanan attracts a lot of visitors and the organizational ability of the staff makes the visit quite memorable. With the addition of the deer safari and bear safari in recent years, more variety has been introduced. Kanjia lake remains as pristine as ever. Our thanks to Sri K.L. Purohit, ACF and Sri G. Sahu, R.O. for all the help. Best wishes!".

P.R. Mohanty
Ex-D.G. of Forests,
Ministry of Environment & Forests,
Govt. of India- 30.11.2014

"It is an amazing trip and wonderful experience to have a great opportunity to learn such an incredible Nandankanan Zoo of Odisha. Our thanks go to all the senior official of CDA and Environment and Forest department as well as warden of Nandankanan Zoo to made this study visit successful".

Saw Dou Wau
Programme Analyst
Climate Change Mitigation, UNDP, Myamar

"Apart from seeing various types of animals, for the first time, I and my wife and my staff were very well looked after by the staff of the zoo. It appears that all the functionaries are well-trained and committed to their respective duties. Best of luck for all of them".

Dr. S.C. Jamir
Hon'ble Governor of Odisha,
07.12.2014

"I visited Nandankanan along with my wife Rekha Rani and younger son Varun Kumar. It was great excitement for us. Nandankanan park is well managed and animals are hale and hearty. It is a very good education centre for students, environmentalists and nature lovers. Really it is a paradise for photographers and Nature lovers. Director of the park and staff are praiseworthy. Our best wishes for the animals and congrats to officers and staff".

M.K. Kureel, IFS
Addl. PCCF, Rajasthan
Jaipur- 18.12.2014

"My first visit to Nandankanan Zoo. Astounding ambience and very well maintained zoo. A good education centre for young students and budding minds. Wonderful experience. Keep it up. With best wishes".

Col Y.K. Gautam
Station Commander of 120 TA Battalion
Bhubaneswar- 19.12.2014

"Visiting Nandankanan Zoo was a great joy. The place has been maintained very well and staff is dedicated, full of knowledge and experience in keeping the wild animals and their enclosures in perfect harmony. My Good wishes. Keep it up".

Vinod Ranjan
Addl. Director General (Wildlife)
Ministry & Environment Forest & CC
Govt. of India, New Delhi- 21.12.2014

"It was indeed a pleasure to visit the zoo after many years. Lots of developments have taken place. It was particularly satisfying to not that the registered society which runs the zoo has become financially self supporting. The animals appeared to be healthy and active. A very large number of visitors, mostly from outside the State, was seen visiting this unique place. Sri Kamal Lochan Purohit, the Asst. Director shows great commitment to his work here and is rightly proud of what all is happening here. I congratulate him and the staff for making this zoo the best in the country. My nine year old grandson, Arnab will cherish fond memories of this visit for a long long time. ".

D.P. Bagchi
Ex-Chief Secretary Odisha
& Ex-Secretary to Govt. of Odisha
30.12.2014

"Nandankanan tour to us was an amazing experience. Our kudos to authorities and to the staff. They are doing commendable work to maintain animal kingdom for the future generation and doing applaudable work to save rare animal world. Good work. I wish them all the great success".

Justice Vinod Prasad
Orissa High Court
04.01.2015

"Enjoyed very much a half day visit to the Zoo – thanks to Mr. Kamal Purohit with his cheerful and expert company. I am impressed to see substantial improvements including the Walk-Through Aviary. The over-all maintenance of the complex looks better than before. Wishing the efforts every success".

Dibyasingha Deb
Sahid Nagar, Bhubaneswar

"After almost a decade visited this Park. Well maintained and highly organized setup. Zoo expansion has been on a theme based plan. Animals are healthy and hygienic. Visitors facility is very good. I enjoyed my visit. Zoo staff and their leader's commands the compliments for the good development carried out. Wish them all the good".

Dr. R. Raju
Commissioner for Textiles and Handlooms
Govt. of Karnataka
Bangalore- 23.01.2015

"Visited Nandankanan. A tremendous feeling I have felt by observing the maintenance and rearing of the animals/birds etc. and the way the animals/birds etc. are maintained, it is really marvelous because the people who are managing are with a humanly touch and great devotion. Thanks a lot to them".

Justice Sujit Narayan Prasad
Orissa High Court

"A treat to be here. A wonderful, peaceful and joyful experience. Well maintained too. Hope I can come in my life atleast once more".

Justice Mihir Jha
Patna High Court
01.03.2015



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 15.72 lakhs during 2014-15 from Nandankanan 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	5954
2	Surgery performed	03
3	Deworming	4421
4	Chemical immobilization	16
5	Screening of blood smears	51
6	Bio -chemical assays	9
7	Bacteriological examination	12
8	Faecal Sample examination	826

Vaccination:

Sl. No.	Vaccination	Number of cases dealt
1	BioFel PCHR (against Feline Panleucopenia)	65
2	F.M.D.V	11
3	H.S.V.	20
4	Triquin Administartion	111
5	Anti Rabies Vaccine	8
6	Tetanus Toxoid	16
7	Multivalent Vaccine	9
8	B.Q. Vaccine	32

PROPHYLACTIC PROTOCOL

A set of protocol are hermetically 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 cats 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, Leopards and Jaguars 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.
- Acaricide and kohrsoline sprays in enclosures in every alternate months.
- Screening of the fecal samples of all Nandankanan Biological Park inmates and de-worming at 3 months interval.
- Periodical screening of blood samples.



SIGNIFICANT ACHIEVEMENTS IN HEALTH CARE:

1. CAPTURE AND TRANSLOCATION OF A STRAYED WILD 'MAKHNA'

On 29.12.2014 early morning, an adult wild *Makhna* (tusk less male) was sighted inside the elephant safari enclosure of NKZP. It had strayed into the elephant safari enclosure by breaking the enclosure wall. It had also injured one of the female captive elephant housed there. The elephant was driven out by means of fire crackers and drum beats. Though the elephant went away, it returned in a night after 3 days and further injured the same female captive elephant. The situation warranted immediate intervention as the *Makhna* became a threat to the captive animal life as well as to the human life. Accordingly it was sedated using a drug combination of Xylazine and Ketamine which was darted through Dist-inject model 60N projector from a distance of about 20 meters. After achieving the state of standing sedation, the elephant was approached from three sides using two kunkies (from Chandaka Wildlife sanctuary) and a captive female elephant of our zoo. All four limbs were tied to restrain the wild elephants. On 05.01.2015, under similar standing sedation, the elephant was lifted to a transportation truck and shifted to Chandaka Wildlife Sanctuary. The elephant was revived and released inside the deep forest of the sanctuary.

2. TREATMENT OF DAMAGED EAR IN A CAPTIVE ELEPHANT

Diseases of the elephant ear are rarely reported in literature, though traumatically induced lesions are common. On 02.01.2015, a strayed wild male elephant entered into the elephant enclosure of Nandankanan Zoological Park and injured one adult captive female elephant. It was observed that the cartilage of left pinna was broken at the base with severe lacerations at the ventral side. A piece of

pinna was also severed from the lower side. Immediately the wound was dressed with intramuscular administration of antibiotics and anti-inflammatory drugs. After about one week, a haematoma developed at the injury site. Also a portion of pinna, with clear demarcation, at the lower side was felt cold and non-responsive to prick of the needle. The haematoma was incised and drained under 'standing sedation'. The wound was dressed aseptically at regular interval. Hot compresses were applied to increase circulation at demarcated areas. But in few days discoloration of a layer of tissue at lower side was noticed. And soon the layer of left lower pinna showed slugging of the epidermis exposing moist and pink tissue. Finally the demarcated lesion dried up and dropped off by itself. Treatment included daily cleaning with warm antiseptic water along with administration of antibiotics. The raw areas were applied with antiseptic cream. The affected ear was irritating to the animal and the animal expressed the discomfort by throwing dirt, soil and water to the affected area. It took two months of wound dressing and treatment to heal the lesions completely.

3. PARAPLEGIA IN A MARMOSET AND ITS SUCCESSFUL TREATMENT

One adult female marmoset (*Callithrix jacchus*) was observed in dullness, lethargic in movement and decrease in appetite. It was unable to move its hind limbs, there was hair loss at the base of the tail and it was unable to move its tail even at the time of defecation. There was also paleness of the visible mucus membranes. Physical examination revealed no deformity in bone structure, there was presence of sensation in tail but there was atrophy of muscles of hind limbs. The case was diagnosed as paraplegia. Treatment with



vitamins B1, B6 and B12 was started with immediate effect through intramuscular route on every alternate day. Haematinics and calcium suspension were supplemented orally through feed as supportive treatment which was accepted. Slowly the marmoset started moving its hind limbs after seven injections. It took about three months for complete recovery of the marmoset with all normal activity.

4. HAND REARING OF A RESCUED LEOPARD CUB

Hand rearing of orphaned young wild animals is always a challenging task for the veterinarian as well as for the keeper. On 19.10.2014, Nandankanan Zoological Park received one female leopard cub rescued from Titlagarh Forest Range of Bolangir Forest Division. The cub was about 3 months old with body weight of 2.9kg. At the time of arrival the cub was weak, anaemic and pot bellied. Routine health examination of the cub was carried out along with fecal sample examination. A room was prepared for its rearing. Along with proper hygienic measures in the rearing room, strict sterilisation of the feeding bottles and utensils was ensured. It was fed with Royal canin baby dog milk 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. Within a week minced chicken meat

was also added to its daily diet. The quantity of diet was revised every week. The cub showed normal health and growth rate during the observation period.

5. HAND REARING OF A MARMOSET BABY

A female marmoset of Nandankanan Zoological Park delivered one baby on 05.02.2015 and the mother marmoset died out of dystocia on 06.02.2015 morning. The orphan marmoset baby was shifted to the rearing centre for hand rearing. Body weight of the one day old marmoset baby was only 25gm. It was little dehydrated. A properly disinfected covered chick brooder with heating element fitted inside was selected for rearing of the day old marmoset baby. A bed made up of gauze was prepared to provide it warmth simulating mother's lap. It was fed with human baby preparation 'Lactogen-1'. On day one, it was fed at every 1hr interval and it ate about 0.5ml in each feeding. Gradually the feeding interval and quantity of feed per feed was increased. After each feeding, its bottom was gently rubbed with soft gauze to stimulate urination and defecation. Multivitamins and calcium preparations were added to the milk. Anti-flatulent drugs and lactobacillus preparations were added to the diet at the time of need. It started taking minced fruit pulps at an age of three months. At about seven months age it started taking insects like grasshoppers.



ANNUAL REPORT ON BIRTH OF CAPTIVE ANIMALS AT NANDANKANAN ZOOLOGICAL PARK
(FROM 01.04.2014 TO 31.03.2015)

Sl. No.	Date of birth	Name of the species	No.s of new born/Sex	Sl. No.	Date of birth	Name of the species	No.s of new born/Sex
MAMMALS				BIRDS			
1	09.04.14	Indian hare	1(U/S)	1/ 2	09.04.14	Spotted dove	2(U/S)
2/3	01.06.14	Spotted deer	2(U/S)	3/ 4	30.06.14	Rose ring parakeet	2 (U/S)
4	30.06.14	Hog deer	1(U/S)	5	30.06.14	Indian peafowl	1(U/S)
5/8	28.07.14	Tiger cub	4(3M+1F)	6/7	23.12.14	Grey pelican	2(U/S)
9/11	19.08.14	Jungle cat	3(1M+2F)	8/ 13	26.12.14	White ibis	6(U/S)
12	03.09.14	Hog deer	1(U/S)	14/ 17	26.12.14	Night heron	4(U/S)
13	09.09.14	Hog deer	1(U/S)	18/ 21	27.12.14	Java sparrow	4(U/S)
14/15	23.09.14	Chausingha	2(U/S)	22/23	29.12.14	Cockatiel	2(U/S)
16	03.11.14	Indian pangolin	1(M)	24/28	29.12.14	Budgerigar	5(U/S)
17	25.12.14	Chimpanzee	1(M)	29/30	29.12.14	Fischer's love bird	2(U/S)
18	25.12.14	Sambar	1(U/S)	31/36	31.12.14	Zebra finch	6 (U/S)
19	30.12.14	Hippopotamus	1(U/S)	37/38	31.12.14	Spotted dove	2(U/S)
20/21	30.12.14	Chausingha	2(U/ S)	39	20.01.15	Pariah kite	1(U/S)
22	30.12.14	Hog deer	1(U/S)	40	22.01.15	Pariah kite	1(U/S)
23/24	31.12.14	Sambar	2(U/S)	41/50	29.03.15	Night heron	10(U/S)
25/26	31.12.14	Spotted deer	2(U/S)	51/54	29.03.15	White ibis	4(U/S)
27/28	20.01.15	Chausingha	2(U/S)	55/64	30.03.15	budgerigar	10(U /S)
29	20.01.15	Hog deer	1(U/S)	65/67	30.03.15	Java sparrow	3(U/S)
30/31	21.01.15	Nilgai	2(U/S)	68/77	30.03.15	Zebra finch	10(U/S)
32/36	31.01.15	Spotted deer	5(U/S)	78/79	30.03.15	Indian peafowl	2(U/S)
37/41	01.02.15	Spotted deer	5(U/S)	REPTILES			
42	05.02.15	Marmoset	1(F)	1	31.12.14	Siamese crocodile	1(U/S)
43/47	20.02.15	Spotted deer	5(4M+1F)	2	01.01.15	Siamese crocodile	1(U/S)
48/52	22.02.15	Spotted deer	5(4M+1F)	3/4	22.01.15	Star tortoise	2(U/S)
53/55	04.03.15	Spotted deer	3(2M+1F)	5/6	31.03.15	Gharia I crocodile	2(U/S)
56/58	07.03.15	Spotted deer	3 (M)	7/8	31.03.15	Flap shelled turtle	2(U/S)
59/61	10.03.15	Spotted deer	3(2M+1F)	ABSTRACT			
62/65	15.03.15	Spotted deer	4(2M+2F)				
66/69	20.03.15	Spotted deer	4(2M+2F)				
70/74	25.03.15	Spotted deer	5(3M+2F)				
75/77	29.03.15	Spotted deer	3(2M+1F)				
78	30.03.15	Barking deer	1(U/S)				

ANNUAL REPORT ON DEATH OF CAPTIVE ANIMALS AT NANDANKANAN ZOOLOGICAL PARK
(FROM 01.04.2014 TO 31.03.2015)

MAMMALS

SL. NO.	DATE	ANIMAL	AGE	SEX	CAUSE OF DEATH
1	10.04.14	Normal colour tiger	21 years 7months	F	Respiratory failure
2	11.04.14	Ratel	About 20 years	M	Septicemia associated with hepatitis and old age
3	22.05.14	Hybrid lion	About 20 years 5months	F	Old age associated with multiple tumor in both lungs
4	06.06.14	Hybrid lion	About 20 years 5months	F	Old age associated with ascites and hepatitis
5	28.06.14	Hog deer	About 2 years 9 months	F	Impaction associated with pneumonia
6	06.07.14	Giant fruit bat	Adult	F	Respiratory failure
7	01.08.14	Swamp deer	About 6years	F	Septicemia associated with abscess in the frontal sinus
8	06.08.14	Normal coloured tiger	19 years	M	Old age associated with lungs collapse and haemorrhagic gastro - enteritis
9	09.08.14	Spotted Deer	Adult	M	Acute pneumonia associated with old age
10	11.08.14	Leopard	17 years	M	Acute pneumonia
11	13.08.14	Four horned antelope	About 7 years	M	Tumor in the liver, spleen, ruminal wall and peritoneum along with cachexia
12	14.08.14	Four horned antelope	About 2years	F	Internal haemorrhage and infighting
13	14.08.14	Four horned antelope	About 1year	F	Septicemia (Black Quarter)
14	15.08.14	Four horned antelope	About 1 year	M	Muscle haemorrhage with Septicemia (Black Quarter)
15	15.08.14	Four horned antelope	About 1year	F	Muscle haemorrhage with Septicemia (Black Quarter)
16	17.08.14	Four horned antelope	About 1 year	M	Muscle haemorrhage with Septicemia (Black Quarter)
17	17.09.14	Slow loris	About 10 years	M	Haemorrhagic lungs & liver along with haemorrhagic gastritis and cardiac dilatation
18	21.09.14	Black buck	About 11year	F	Septicemia with muscle haemorrhage associated with cirrhosis in liver
19	03.10.14	Indian hare	Adult	F	Enteritis
20	24.10.14	Indian hare	Adult	M	Enteritis associated with Hepatitis
21	06.11.14	Indian pangolin	About 10years	M	Pneumonia associated with haemorrhagic enteritis
22	08.11.14	Indian pangolin	4 days	M	Mother rejection and pneumonia
23	13.11.14	Squirrel monkey	About 20years	M	Old age associated with Hepatitis
24	21.12.14	White tiger	15 years	M	Pneumonia associated with old age
25	24.12.14	Indian hare	Adult	F	Enteritis
26	06.01.15	Grant's zebra	About 15 years	F	Haemorrhagic myositis and pulmonary edema suspected for (Black Quarter)
27	06.02.15	Marmoset	Adult	F	Dystocia

BIRDS

SL. NO.	DATE	ANIMAL	AGE	SEX	CAUSE OF DEATH
1	26.05.14	Star finch	About 11 yrs	M	Old age
2	15.07.14	Sarus crane	About 30yrs	F	Old age associated with septicemia
3	30.07.14	Blossom headed parakeet	Adult	F	Pneumonia and hepatitis
4	12.08.14	Open bill stork	About 2yrs	M	Pneumonia
5	18.08.14	Mandarin duck	About 10yrs	F	Fatty liver and nodular spleen(T.B)
6	18.08.14	Canary	Adult	M	Skeletal muscle haemorrhage
7	21.10.14	Yellow backed lorry	About 30yrs	F	Haemorrhagic enteritis
8	06.11.14	Cassowary	About 16 yrs	F	Tuberculosis
9	22.11.14	Rose ring parakeet	Adult	F	Shock due to infighting
10	26.11.14	Brown throated conure	Adult	M	Pneumonia
11	11.12.14	Moustache parakeet	Adult	F	Enteritis
12	25.12.14	Mute swan	Adult	F	Septicemia associated with haemorrhagic enteritis and proventricular haemorrhage
13	08.03.15	Lady amhrest's pheasant	Adult	M	Haemorrhagic enteritis
14	12.02.15	Jandaya conure	About 16 yrs	F	Haemorrhagic enteritis
15	15.03.15	Lady amhrest's pheasant	Adult	F	Cervical muscle haemorrhage associated with lungs haemorrhage, hepatitis and enteritis
16	24.03.15	Red chattering lorry	Adult	M	Fatty liver haemorrhagic syndrome and hepatitis.



REPTILES

SL. NO.	DATE	ANIMAL	AGE	SEX	CAUSE OF DEATH
1	10.10.14	Gharial	About 34 years	F	Old age associated with collapse of lungs and hepatitis.
2	21.10.14	Gharial	About 36 years	M	Peritonitis associated with old age
3	04.11.14	Gharial	Adult	M	Haemopericardium, peritonitis associated with old age.
4	18.11.14	Gharial	About 34 years	M	Peritonitis associated with collapse of lungs
5	25.11.14	Mugger crocodile	About 50 years	F	Metritis associated with egg bound condition
6	27.11.14	Gharial	Adult	M	Haemopericardium, peritonitis with collapse of lungs
7	04.01.15	Salt water crocodile	About 50 years	F	Metritis, peritonitis and egg bound condition associated with visceral gout
8	07.02.15	Spectacled caimon	About 13 years	M	Ulcerative gastritis and hepatitis
9	17.03.15	Gharial	About 31 years	M	Peritonitis and debility
10	19.03.15	Gharial	About 33 years	M	Peritonitis

ABSTARCT

Mammals	Birds	Reptiles	Total
27	16	10	53



BIRTH AND DEATH OF CAPTIVE ANIMALS FOR THE LAST FIVE YEARS

2010-11						
Types	Stock as on 01.04.2010	Birth	Acquisition	Death	Disposal	Stockas on 31.03.2011
Mammals	634	122	00	37	29	690
Birds	812	59	02	17	00	856
Reptiles	134	63	00	02	00	195
Total	1580	244	02	56	29	1741
2011-12						
Types	Stock as on 01.04.2011	Birth	Acquisition	Death	Disposal	Stockas 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	Death	Disposal	Stockas 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	Stockas 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	Stockas 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

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 of mortality
		Mammals	Birds	Reptiles	Total	
2010 - 11	1741	37	17	02	56	3.21 %
2011 - 12	1972	40	12	04	56	2.83 %
2012 - 13	2153	18	09	02	29	1.33%
2013 - 14	2321	26	06	05	37	1.57%
2014 - 15	2555	27	16	10	53	2.03%



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 2014-15 is overleaf.



Month-wise production of fodder from the captive fodder farm (in quintal) for the year 2014-15

Month	Para grass	Hybrid Napier (NB-21 CO ₃)	Common grass	Sorghum (M.P. chari)	Oat grass	Dhanial leaf	Banana culms	Cowpea
04/2014	263.15	31.50	426.70	68.00	81.00	-	-	48.00
05/2014	278.38	46.55	503.49	65.43	-	-	-	102.37
06/2014	269.40	91.56	543.65	73.00	-	-	-	-
07/2014	279.38	95.08	571.19	67.15	-	-	-	-
08/2014	281.48	96.10	553.59	28.60	-	-	-	52.50
09/2014	272.40	93.00	614.10	-	-	-	-	-
10/2014	281.48	96.10	633.49	-	-	-	-	-
11/2014	273.70	93.30	613.20	-	-	-	-	-
12/2014	283.43	96.50	633.64	-	-	-	-	-
01/2015	231.03	123.10	543.64	-	119.95	0.36	-	23.95
02/2015	199.64	64.80	445.92	-	206.20	-	5.40	27.60
03/2015	268.38	26.40	537.34	34.70	125.50	-	6.20	13.00
TOTAL	3181.85	953.99	6619.95	336.88	532.65	0.36	11.60	267.42

The total production of fodder in the fodder farm during the year 2014-15 was 11,904.70 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. 84 feed items are collected and supplied daily to meet the nutritional requirements of the 149 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.

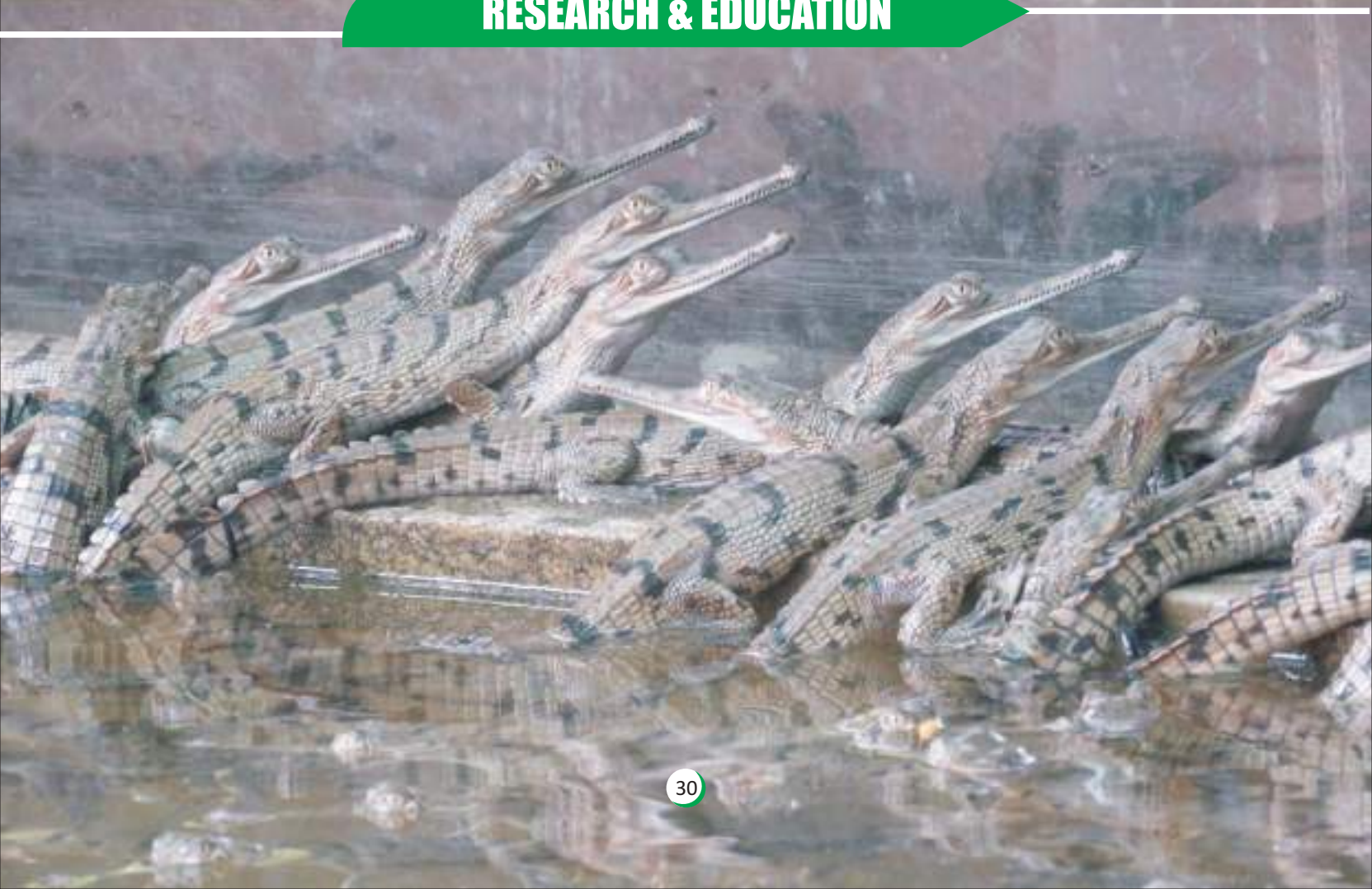
LAWNS AND GARDENS

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 organisations 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 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. A close liaison was made with BNHS & adjoining States for the procurement of birds to start the breeding programme.

(c) Establishment of Wildlife Forensic 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.

(d) Research Publications during 2014-15:

1. Sahu, S.K., Panda, S. & Mohapatra, R.K. (2014) Management and breeding of black kite or common pariah kite (*Milvus migrans*) in Nandankanan Zoological Park, Bhubaneswar, Odisha. *Indian Zoo Year Book*. Vol. VIII, pp. 105–109.
2. Nair, M. V., Acharjyo, L.N., Panda, S. & Sahu, S.K. (2014) Longevity of some wild birds in captivity from Nandankanan Zoological Park with instances of a world longevity record of Egyptian vulture (*Neophron percnopterus*). *Indian Zoo Year Book*. Vol. VIII, pp. 39-43.
3. Bhujabal, G. N., Mohanty, P.K. & Panda, S. (2014) Haemocyatological analysis of three species of captive cervids of Nandankanan Zoological Park, Odisha. *Indian Zoo Year Book*. Vol. VIII, pp. 134-139.
4. Mohapatra, R.K. and Panda, S. (2014) Behavioural descriptions of Indian pangolins (*Manis crassicaudata*) in captivity. *International Journal of Zoology*. Volume 2014, Article ID 795062, pp 1-7. DOI: [10.1155/2014/795062](https://doi.org/10.1155/2014/795062).
5. Mohapatra, R.K., Panda, S. and Nair, M. V. (2015) On mating behaviour of captive Indian pangolin (*Manis crassicaudata*). *Taprobanica*. 7(1): 57-59.
6. Mohapatra, R.K., Panda, S., Acharjyo, L.N., Nair, M.V. & Challenger, D.W.S. (2015) A note on the illegal trade and use of pangolin body parts in India. *Traffic Bulletin*. 27(1): 33-40.
7. Mohapatra, R.K., Panda, S., Nair, M.V. and Acharjyo, L.N. (2015) Check list of parasites and bacteria recorded from pangolins (*Manis* sp.). *Journal of Parasitic Diseases*. Springer publication, DOI: 10.1007/s12639-015-0653-5 (online first).
8. Mohapatra, R.K., Sahu, S.K. and Panda, S. (2015) Mating behaviour of striped hyena (*Hyaena hyaena*) in captivity. In: Gupta V.K., Verma, A.K. & Singh, G.D. (Eds.) *Perspectives in Animal Ecology and Reproduction*. Daya Publishing House, New Delhi. Vol.10. pp. 331-336.

Education

One of the biggest challenges of zoo education is the large, diverse audiences with different levels of interest and learning styles. There ought to be a balance between communicating challenging conservation issues to people whilst still keeping them positive and engaged. People inspired by their interactions with zoo animals to act in a sustainable manner would be the ones who would be able to make the difference to the future for wildlife. Our major strength in the education front is 2.5 million visitors who annually come to the zoo. 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.

Wildlife Week celebration

60th Wildlife Week was celebrated in a grand manner in the zoo from 2nd October, 2014 to 8th October, 2014 with display of banners, educating school children on wildlife conservation. 1784 school children had free entry into the Zoological Park during the Wildlife Week. Sit & draw competition were organized on the occasion of Wildlife Week celebration among the students of nearby schools.

Elephant Day celebration

Elephant Day was celebrated at Nandankanan Zoological Park on 4th October, 2014 in the presence of Sri R.K. Sharma, IAS, Principal Secretary, Forest & Environment Department, and Sri S.S. Srivastava, IFS, Principal Chief Conservator of Forests (Wildlife) & Chief Wildlife Warden, Odisha, Bhubaneswar. The celebration was observed with a mass awareness programme amongst more than 2000 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 organised by the Chandaka Wildlife Division from Nandankanan to

Godibari of Chandaka Division to mark the occasion. A meeting was convened to distribute prizes to the winners of the quiz competition as well as the winners of naming competition of two white tiger cubs.

Foundation Day celebration

55th Foundation Day of Nandankanan was celebrated on 29.12.2014 in the zoo premises. Sri Bikram Keshari Arukh, Hon'ble Minister, Forest & Environment, Sri S.S. Srivastava, IFS, Chief Wildlife Warden, Odisha graced the occasion as the Hon'ble guests of the ceremony. Annual Report for the year 2013-14, 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, 2015 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 of media. The importance of wetlands and the need for protection of these ecosystems were highlighted in the meeting.



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55th FOUNDATION DAY

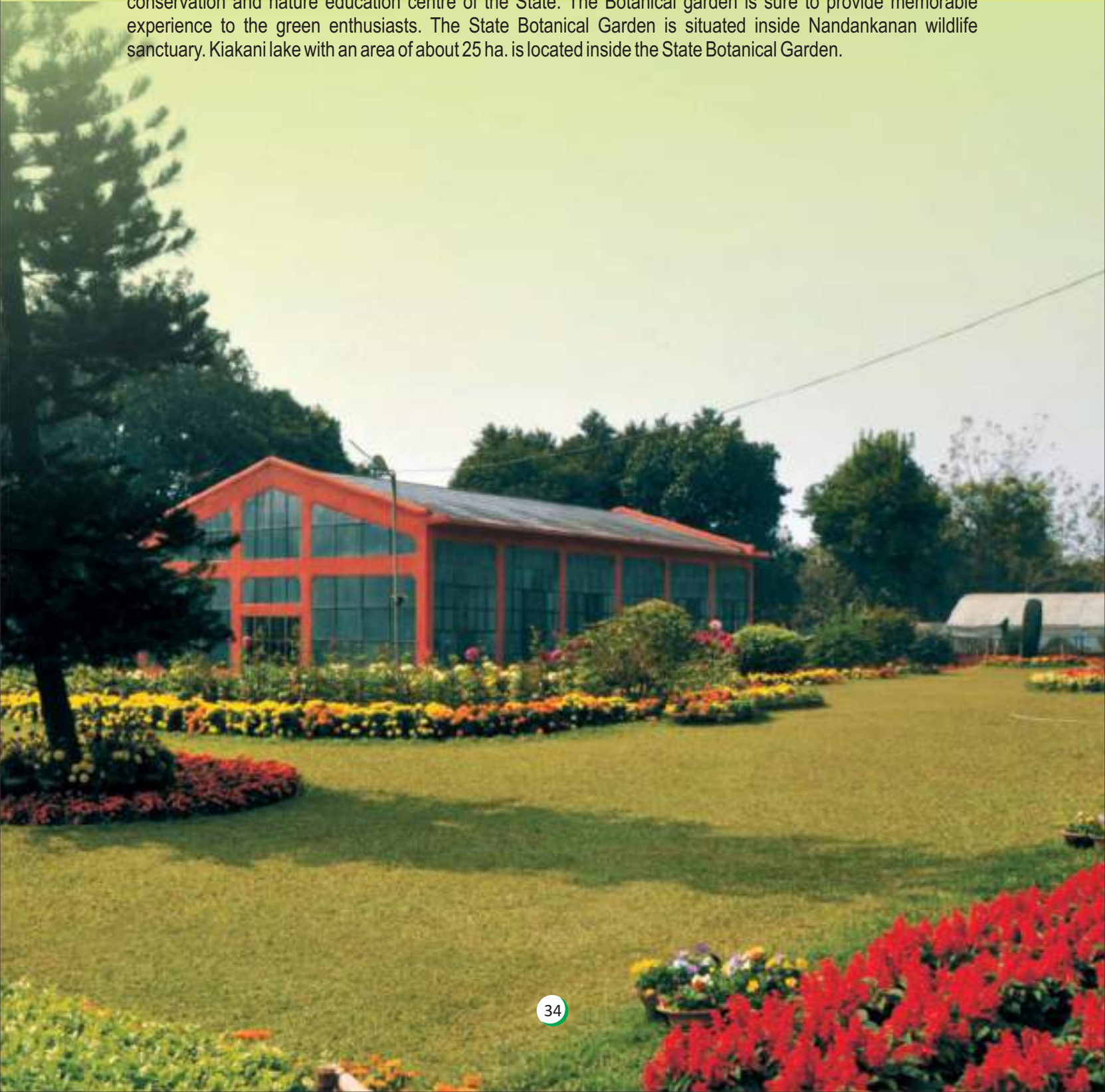
NANDANKANAN ZOOLOGICAL PARK

29TH DECEMBER 2014



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

BOTANICAL GARDEN

Children upto 12 years	- Free
Adult	- Rs.10/-
Two wheeler	- Rs.10/-
Three wheeler	- Rs.20/-
Four wheeler	- Rs. 50/-
Heavy vehicle	- Rs.100/-

Picnic spot

Category-1 (upto 10 persons)	- Rs. 100/-
Category-2 (upto 10-25 persons)	- Rs. 250/-
Category-3 (upto 25-50 persons)	- Rs. 500/-
Category-4 (upto 50-100 persons)	- Rs. 1000/-

FRH-I- (Suit-I)	- Rs.1200.00+Service charges
FRH-I-(Suit-II)	- Rs.1000.00+Service charges
FRH-II	- Rs.600.00+Service charges
Holiday Cottage	- (gr. floor) Rs.1000.00+Service charges
Holiday Cottage	- (first floor) Rs.1000.00+Service charges

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, Diffenbachia, 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.

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 cows and tribal hut are the attractions of the garden.

Visitor flow & revenue generated during last five years

Year	No. of visitors	Total Revenue collected (Rs. in lakh)
2010-2011	86,354	12.63
2011-2012	88,148	13.04
2012-2013	1,11,180	16.57
2013-2014	1,32,920	19.45
2014-2015	1,38,681	20.62

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

Government of Odisha 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.
- © 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 which 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".







