

**Annual Report**  
**2009-2010**



Nandankanan Zoological Park  
Orissa, India

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## From Director's Desk

Nandankanan Zoological Park was established in the natural forests near the Barang Railway Station on 29<sup>th</sup> December, 1960. Nandankanan, the first Zoological Park of the State started with a few animals with vision to bring it to prominence and elevate it to the position of a major Zoological Park in the country. The Zoological Park along with the State Botanical Garden and Kanjia lake ( a Wetland of National Importance) constitute the Nandankanan wildlife sanctuary which was notified in August, 1979 over an area of 4.37 Sq.km. Many free living wildlife species including 13 species of mammals, 15 species of reptiles and 71 species of birds have been documented inside Nandankanan sanctuary.

There have been significant developments in Nandankanan over the past fifty years in animal collection, housing, animal husbandry, health care as well as in creating better visitor amenities. Several facilities such as Lion Safari, White Tiger Safari, Nocturnal Animal House, Reptile Park, Orchid house, Aquarium, Toy Train, Boating facility, Ropeway, Nature Trail etc were created . However, the super cyclone on 29<sup>th</sup> October, 1999, struck a deadly blow and damaged many structures, uprooted large number of trees and resulted in death of many animals. Sudden death of tigers in June-July, 2000 due to "Trypanosomiasis" attracted adverse publicity. The said catastrophe has created an opportunity for strengthening the scientific management of the Zoological Park.

Nandankanan attained distinction in first ever breeding success of the Gharial (*Gavialis gangeticus*) in captivity in a naturalistic pool created for the purpose, through a full grown male gharial brought from Frankfurt zoo on 7<sup>th</sup> May, 1980. In the same year, two normal coloured tigers 'Deepak and Ganga' gave birth to 3 white off-springs named 'Debabrata', 'Alaka' & 'Nanda' on the 8<sup>th</sup> January, 1980 creating history. With this, Nandankanan created its own family of white tigers and a separate gene pool of tigers. The other significant breeding success of Nandankanan includes Indian pangolin (1971), Mouse deer (1971), Malayan Giant squirrel (1972), Sloth bear (1978), Muger (1982), Himalayan Black bear (1982), Lion-tailed Macaque

(1983), Brow-antlered deer (1984), Salt water crocodile (1985), Indian porcupine (1986), White necked stork (1986), Caiman crocodile (1990), Water monitor lizard (1996), Swamp deer (1998), Chimpanzee (1999), Grey heron (2000) and Siamese crocodile (2010) and many free living animals including Open billed storks.

The zoo is enriched with 101 enclosures out of which 47 are open moated enclosures to house all the captive animals of Nandankanan. It houses 120 species of wild animals which include 40 species of mammals, 56 species of birds and 24 species of reptiles. There are more than 1580 numbers of animals, including 634 mammals, 812 birds and 134 reptiles. Eighty eight (88) species of indigenous species along with 32 exotic species of animals add glory to the collection of Nandankanan Zoological Park. The animal collection includes 15 species of endangered mammals, 6 species of endangered birds and 10 species of endangered reptiles listed in Schedule I of Wildlife (Protection) Act, 1972.

Nandankanan is the only zoo in India with the credit of having Patas monkey (*Erythrocebus patas*), Eastern Rosella (*Platycercus eximus*) and Open-billed Stork (*Anastomus oscitans*). Besides, it has the uniqueness among the two zoos in India having Orangutan (others in Kanpur Zoological Park, Uttar Pradesh), Indian Pangolin (others in Jhargram Zoo, West Bengal), Spotted Munia (Others in Sayajibaug Zoo, Gujarat) and Burmese Python (others in Culcutta Snake Park, West Bengal). It is among the three zoos of India having Green-winged Macaws, Cinereous Vulture and Nicobar Pigeon.

Many research works have been undertaken in Nandankanan including the 'Indian Pangolin Conservation Breeding Center' and 'Breeding Center for White backed vulture'. Besides, research on ecto-endo parasites of the captive animals has been completed to ensure proper health care as well as disease control. Recently, a pictorial booklet on 'Butterflies of Nandankanan' has been published which describes 85 species of butterflies available within the sanctuary area. As a whole, it can be summarized that

Nandankanan is an excellent center for integration of *ex-situ* and *in-situ* conservation for various species of flora and fauna.

We have completed another outstanding year of unprecedented visitor attendance, conservation breeding, research and education. In the year 2009 -10, there has been substantial improvement in the field of health care, fodder production and visitor facilities in Nandankanan. More than two million people visited the Zoological Park during the year 2009-10. In order to maintain highest standard of health care and animal husbandry practices, a close collaboration was made with the Orissa Veterinary College. The services of the Health Committee and Technical Committee were utilized on important health issues. Prevalence of diseases such as Trypanosomiasis, Feline Pan – leucopenia, Tuberculosis, Foot and mouth diseases were prevented due to strict implementation of prophylactic measures. The mortality rate of the animals has been maintained at a very low rate of about 3% due to intensive health care.

The housing of the animals and the enclosure enrichment works were taken up during the year. Special repairing works in most of the carnivore enclosures and the safaris have been executed. One new facility for the feed distribution has been created. The feed distribution centre has facilities to store perishable materials and also has a kitchen to cook the food of the captive animals. The births of three tiger cubs and a chimpanzee baby in the zoo during the year 2009-10 are significant moments for the entire zoo management.

The annual report provides various information about Nandankanan Zoological Park and the main activities and events that had taken place during 2009 -10. During the coming years, Nandankanan will continue to grow as an outstanding centre for wildlife conservation, education and research. I hope, the exciting relationship between the visitors and wildlife will further strengthened in the future years to come.

**Dr. Sudarsan Panda, IFS**  
Director  
Nandankanan Zoological 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 wildlife and ex-situ conservation.

## OBJECTIVES

Housing of wild animals and birds with special emphasis on research and education on their ecology, behavioral 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 create a healthy situation and facility to carry out research and study by experts, researchers on captive animals and birds.
- High priority on awareness and education and exciting visitors experience by providing excellent visitors amenities.







## Nandankanan Biological Park

Nandankanan Biological Park is one of the premier large Zoos of India located amidst a beautiful natural setting. 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 2.10 million tourists have visited the zoo during 2009-10. Most of the animals of the zoo live in open, large moated areas surrounded by natural vegetation. This gives them a feeling of living close to their natural habitat.

## Salient Feature

|  |                                    |  |                          |
|--|------------------------------------|--|--------------------------|
| <b>Area</b>  | <b>Nandankanan Biological Park</b> |  | 362.1 ha. ( 3.62 Sq.Km.) |
|  | (includes Kanjia Lake of 66.1 ha.) |  |                          |
|  | Nandankanan Wildlife Sanctuary.    |  | 437 ha. ( 4.37 Sq.Km.)   |
| <b>Captive animals and birds</b><br>(as of 31.03.2010) | Mammals                            | 41species  | 634Nos.                  |
|  | Birds                              | 56species  | 812Nos.                  |
|  | Reptiles                           | 24species  | 134Nos.                  |
|  | <b>TOTAL</b>                       | <b>121species</b>  | <b>1580Nos.</b>          |
| <b>No.of Animal House:</b>                             | 101 nos. (Cages- 54 , Moats -47)   |  |                          |
| <b>Visitors</b>  | 21,28,478 nos.                     |  |                          |
| <b>Zoo Holiday</b>                                     | Every Monday                       |  |                          |
| <b>Zoo timings</b>                                     | For visitors                       | 0730 hrs. to 1730 hrs. (April – September)<br>0800 hrs. to 1700 hrs (October to March) |                          |
| <b>Animal Feeding Time</b>                             | Carnivores                         | 03.00PM to 05.00PM (Except Monday)   |                          |
|  | Reptiles                           | 11.00AM to 01.00PM   |                          |
|  | Birds                              | 11.00AM to 01.00PM/03.00PM to 05.00PM  |                          |
|  | Herbivores                         | 11.00AM to 01.00PM/03.00PM to 05.00PM  |                          |





## Special Attractions

The sylvan setup of the Park boasts for many special features, which lure the visitors. Following are must for the visitors.

### Boating

Boating in Kanjia Lake on paddle or row boats in the aquamarine blue water is an exhilarating experience. The multi storey Boat Ghat is renovated to give new looks with enough space for the visitors to relax and enjoy the picturesque lake. The boating service is outsourced better management and satisfaction of the visitors. The lake is also known for its rich floral and faunal diversity.

### White Tiger and Lion safari

A twenty-minute drive through the meandering roads in a specially protected vehicle, takes you straight into prides of lions and right in front of the most fascinating white tigers. It exposes you to unique reverse situation where you are confined in a vehicle and the animals are in open around you. Nandankanan is the only zoo in India with a white tiger safari.

### Nocturnal Animal House

Many animals that only move freely at night but are almost immobile and hide in the thicket or in their burrow during the day are housed here. The twilight condition is created in these enclosures to stimulate these animals to become active to provide an opportunity to the visitors to know what these animals secretly do in the dark of the night.

### Cable Car (Aerial Ropeway)

This 620 meter long ropeway transports the visitors across the lake to the Botanical Garden on the other side, which has many rare and endangered species of flora from different parts of the world. A number of gardens and cactus house,

orchidarium, rose garden and lots more to see. A first of its kind in any Indian zoo.

### Reptile Park

A reptile park, with a life size tyrannosaurus at its entrance with a cave-like interpretation centre houses 20 species of reptiles including crocodiles, lizards turtles and snakes. One would encounter a king cobra and a huge Malayan Python.

### Toy Train

The Toy Train have been a great attraction for the kids. It starts from the baby toy train station which goes round a circular track of 1.58 Km. along the lake and thickly vegetated area with free ranging herbivores.

### Aquarium

Aquarium is the integral component of a modern zoo. A state of art modern aquarium is commissioned during the financial year with the technical collaboration of CEE Ahmedabad. Being a zoo Aquarium adequate steps were taken to include the well researched education materials on the various aquatic ecosystem their uniqueness and conservation need. The aquarium was dedicated to the visitors on 4<sup>th</sup> February 2008 by the Honourable Chief Minister, Orissa.

### Library

If one has got time and an appetite for learning then the centrally located Library, with a wonderful collection of books on wild life can serve you to your satisfaction.

### Other services

- Interactive educational & awareness programmes.
- Conducted tour for school children.
- Trained guides.

## Visitors' Amenities

- Drinking water kiosks
- Toilets
- Special toilets, wheel chairs & ramps for physically challenged persons
- Rest areas / sit outs / visitors sheds at convenient location
- Visitors' cottages
- Restaurant (run by otdc)
- Cloak room
- Perambulator for children
- First-aid (at zoo hospital & administrative office)
- Library
- Emission free battery operated vehicle for zoo animal visit (run by oreda)
- Information centre
- Guide maps
- Publications
- Nature shop (tiger den)
- Nature interpretation centre
- Environment friendly paper bags (made from recycled paper)
- 3D theatre

## Admission fees and levy

| Entry Fee  |                     |
|--|---------------------|
| Indians (Adults)                                   | Rs. 20/-            |
| Children Age group of 3-12                         | Rs. 5/-             |
| Foreign visitor                                    | Rs. 100/-           |
| Differently abled persons & Children below 3 years | FREE                |
| Tourist Cottage                                    | Rs. 200 & 300/-     |
| Still Camera                                       | Rs. 5/- per day     |
| Digital Camera                                     | Rs. 10/- per day    |
| Video Camera (Amateur Photographer)                | Rs. 500/- per day   |
| Movie Camera (Professional Photographers)          | Rs. 4,000/- per day |
| Parking fee for light vehicles                     | Rs. 30/-            |

| Safari                                    |                    |
|---|--------------------|
| Lion safari                               | Rs. 15/-           |
| White Tiger safari                        | Rs. 15/-           |
| Toy Train                                 | Rs. 10/-           |
| Rope Way                                  | Rs. 30/-           |
| Boating (2 seaters)                       | Rs. 25/-           |
| (4 seaters)                               | Rs. 50/-           |
| Family boat                               | Rs. 100/-          |
| Wheel chair for differently abled persons | Rs. 5/- (Per hour) |
| Perambulator for children (per hour)      | Rs. 1/-            |

### Highest number of visitors

2009-10 was the busiest year in the history of the Zoo. There was a big increase in annual Zoo visits, taking the total number of visitors up to a highest record of 21,28,478.

### Month wise number of visitors during 2009-10

| Month                           | No. of visitors | Month    | No. of visitors |
|---------------------------------|-----------------|----------|-----------------|
| April                           | 1,11,369        | October  | 2,22,566        |
| May                             | 1,03,500        | November | 1,64,011        |
| June                            | 1,30,479        | December | 3,08,793        |
| July                            | 85,995          | January  | 3,48,205        |
| August                          | 1,29,692        | February | 2,30,546        |
| September                       | 1,26,452        | March    | 1,66,864        |
| Free entry during wildlife week |                 |          | 696             |

### No of visitors and revenue collected during last five years

| Year      | No. of visitors | Revenue collected (in Rs.) |
|-----------|-----------------|----------------------------|
| 2005-2006 | 13,05,759       | 1,46,04,179                |
| 2006-2007 | 15,08,887       | 1,76,52,140                |
| 2007-2008 | 17,32,702       | 1,92,93,085                |
| 2008-2009 | 18,62,423       | 2,15,04,882                |
| 2009-2010 | 21,28,478       | 3,55,77,914                |



## Human Resource

### Statement showing sanctioned strength and present in Nandankanan Biological Park

| Sl. | Name of each category of post | Sanctioned strength | No. of staff in position | No. of vacancy |
|-----|-------------------------------|---------------------|--------------------------|----------------|
| 1.  | Director                      | 1                   | 1                        | -              |
| 2.  | Deputy Director               | 1                   | 1                        | -              |
| 3.  | Senior Veterinary Officer     | 1                   | 1                        | -              |
| 4.  | Assistant Director            | 1                   | 1                        | -              |
| 5.  | Veterinary Assistant Surgeon  | 1                   | 1                        | -              |
| 6.  | Forest Ranger                 | 8                   | 8                        | -              |
| 7.  | Forester                      | 9                   | 9                        | -              |
| 8.  | Forest Guard                  | 25                  | 14                       | 11             |
| 9.  | Head Clerk                    | 1                   | 1                        | -              |
| 10. | Junior Accountant             | 1                   | -                        | 1              |
| 11. | Senior Clerk                  | 8                   | 6                        | 2              |
| 12. | Junior Clerk                  | 8                   | 5                        | 3              |
| 13. | Senior Stenographer           | 1                   | 1                        | -              |
| 14. | Junior Stenographer           | 1                   | 1                        | -              |
| 15. | Driver (L.V.)                 | 5                   | 4                        | 1              |
| 16. | Driver (H.V.)                 | 3                   | 3                        | -              |
| 17. | Fitter-cum-Mechanic           | 1                   | -                        | 1              |
| 18. | Engine Driver                 | 1                   | -                        | 1              |
| 19. | Livestock Inspector           | 3                   | 1                        | 2              |
| 20. | Guide                         | 1                   | -                        | 1              |
| 21. | Projector Operator            | 1                   | -                        | 1              |
| 22. | Booking Clerk                 | 3                   | 3                        | -              |
| 23. | Artist-cum-Modeler            | 1                   | 1                        | -              |
| 24. | Junior Librarian              | 1                   | 1                        | -              |
| 25. | Khansama                      | 1                   | -                        | 1              |
| 26. | Gangman                       | 2                   | 2                        | -              |
| 27. | Sweeper                       | 11                  | 6                        | 5              |
| 28. | Animal Keeper                 | 25                  | 17                       | 8              |
| 29. | Office Peon                   | 2                   | 2                        | -              |
| 30. | Mate                          | 2                   | 2                        | -              |
| 31. | Mahunt                        | 3                   | 1                        | 2              |
| 32. | Mali                          | 5                   | 4                        | 1              |
| 33. | Watchman                      | 7                   | 7                        | -              |
| 34. | Boatman                       | 2                   | 2                        | -              |



| Sl. | Name of each category of post    | Sanctioned strength | No. of staff in position | No. of vacancy |
|-----|----------------------------------|---------------------|--------------------------|----------------|
| 35. | Ticket Collector                 | 2                   | 2                        | -              |
| 36. | Zoo Watcher                      | 6                   | 5                        | 1              |
| 37. | Bungalow Chowkidar               | 3                   | 2                        | 1              |
| 38. | Winch Operator                   | 1                   | 1                        | -              |
| 39. | Office Chowkidar                 | 1                   | 1                        | -              |
| 40. | Cook-cum-Animal Feed Distributor | 1                   | -                        | 1              |
| 41. | Welder-cum-Blacksmith            | 1                   | -                        | 1              |
| 42. | F.E.O.                           | 1                   | 1                        | -              |
|     | <b>Total</b>                     | <b>163</b>          | <b>118</b>               | <b>45</b>      |

### Capacity building workshop for veterinary officers

In commemorating golden jubilee celebration of Nandankanan Biological Park, a capacity building workshop of thirty two veterinary officers of State Animal Husbandry Department was organized by Nandankanan on 9th and 10th February 2010 at Regional Museum of Natural History, Bhubaneswar. The objective of such event was to sensitize the veterinary officers working in / or around the national parks, sanctuaries and mini zoos regarding management, diseases, post mortem and tranquilisation techniques of wild life *in-situ* as well as *ex-situ* condition. Emphasis was also laid on the importance of proper

coordination between veterinary and forest officials in effectively mitigating different crisis in wild life sector under field condition. The participants also got a scope to familiarize themselves with the darting equipment for tranquilisation purpose. The said workshop was inaugurated by PCCF (Wildlife) & Chief Wildlife Warden, Orissa. Eminent resource persons like Dr. Naveen Kumar from Hyderabad Zoo, Dr. L.N. Acharyo, Expert Zoo vet, specialists from State veterinary college and Nandankanan Zoo vets interacted with the participants on many wildlife issues in the field condition pertaining to veterinary problem and provided vital inputs.





# Finance

## Revenue Collected

An amount of Rs. **3,55,77,914.00** was collected as revenue from all sources during 2009-2010.

## Visitor flow and revenue generated during the year 2009-10

| Item                                   | Visitors number | Revenue (in rupees)   |
|--|-----------------|-----------------------|
| Common visitors (entry fee collection) | 1871290         | 28593640.00           |
| Children (half)                        | 247963          | 1239815.00            |
| School children                        | 7979            | 30556.00              |
| Foreign visitors (SARC)                | 4               | 160.00                |
| Foreign visitors (others)              | 1242            | 124200.00             |
| Still camera                           | 60302           | 301510.00             |
| Digital camera                         | 27372           | 273720.00             |
| Handycam (video)                       | 3376            | 337600.00             |
| Aquarium                               | 9497            | 84245.00              |
| Tourist cottage                        |                 | 8100.00               |
| Wheel chair                            |                 | 4180.00               |
| OTDC                                   |                 | 2000.00               |
| OTDC snacks bar                        |                 | 24000.00              |
| Weighing machine                       |                 | 7992.00               |
| Cloak room                             |                 | 3480.00               |
| Rent of boating facilities             |                 | 481948.00             |
| Rent of parking place                  |                 | 745923.00             |
| Rent of food court                     |                 | 60600.00              |
| Rent of 3D theatre                     |                 | 14520.00              |
| Rent of toy train facility             |                 | 606840.00             |
| Rent of safari facility                |                 | 1875285.00            |
| Rent of aquarium facility              |                 | 170100.00             |
| Revenue collected at Botanical garden  |                 | 581300.00             |
| Misc. revenue                          |                 | 6200.00               |
| <b>Total revenue collected</b>         |                 | <b>3,55,77,914.00</b> |

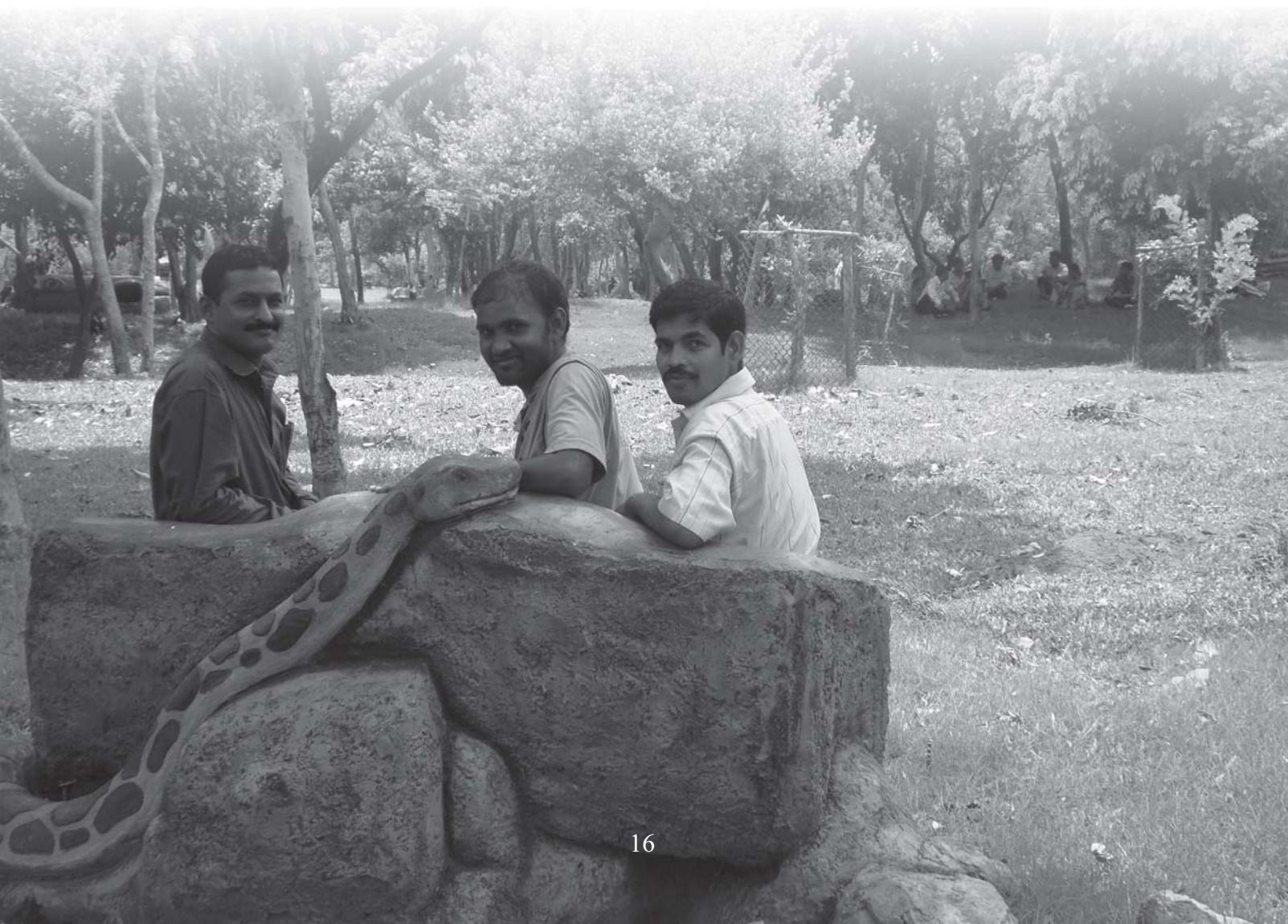
### Revenue generated during last five years



| Year             | Revenue collected (in Rs.) |
|------------------|----------------------------|
| 2005-2006        | 1,46,04,179.00             |
| 2006-2007        | 1,76,52,140.00             |
| 2007-2008        | 1,92,93,085.00             |
| 2008-2009        | 2,15,04,882.00             |
| <b>2009-2010</b> | <b>3,55,77,914.00</b>      |

**Allotment and Expenditure of funds Nandankanan Biological Park during the last five years  
(Amount in Lakhs of Rupees) from different sources**

| Year    | Expenditure & Allotment | Non-Plan | State-Plan | Central Plan | Centrally sponsored plan | CZA grant | Spl. Relief commissioner grant | Urban Dev. Grant | Society | Tourism Deptt. |
|---------|-------------------------|----------|------------|--------------|--------------------------|-----------|--------------------------------|------------------|---------|----------------|
| 1       | 2                       | 3        | 4          | 5            | 6                        | 7         | 8                              | 9                | 10      | 11             |
| 2005-06 | Allotment               | 223.56   | 9.75       | -            | -                        | 54.00     | -                              | 2.00             | 21.05   | -              |
|         | Expenditure             | 220.87   | 9.75       |              |                          | 53.97     |                                | 2.00             | 21.02   | -              |
| 2006-07 | Allotment               | 254.88   | 115.16     | 13.475       | -                        | 94.55     | -                              | -                | 31.98   | 19.17          |
|         | Expenditure             | 154.64   | 115.16     | 13.479       | -                        | 27.30     | -                              | -                | 19.44   | 19.17          |
| 2007-08 | Allotment               | 299.49   | 100.00     | 3.00         | 9.44                     | 77.72     | -                              | -                | 53.26   | -              |
|         | Expenditure             | 297.55   | 100.00     | 2.92         | 9.44                     | 72.28     | -                              | -                | 44.61   | -              |
| 2008-09 | Allotment               | 413.95   | 500.00     | 1.00         | 11.065                   | 40.00     | -                              | -                | 74.74   | 14.28          |
|         | Expenditure             | 383.76   | 500.00     | 1.00         | 11.065                   | 39.87     | -                              | -                | 64.25   | 14.28          |
| 2009-10 | Allotment               | 4.40     | 200.10     | 5.00         | 7.10                     | -         | -                              | -                | -       | 37.62          |
|         | Expenditure             | 4.40     | 200.10     | 5.00         | 7.10                     | -         | -                              | -                | -       | 37.62          |







## Impression of Our Esteemed Guests

"A long desired since the late 70's fulfilled, since I was the Curator Hyderabad Zoo. I heard about this zoo, desired eagerly to see it and today am thrilled at the reality of this beautiful creation of the forest Department. Here the creations for animals in captivity are well planned and designed to give a naturalistic effect, animals are well maintained and the staff took so much pains to show every thing with great eagerness and enthusiasm. I wish all the staff best of success in future creations.

*M. Kamal Naidu*  
Retd. PCCF(AP) & Presently  
Members, Supreme Court Commission  
09.07.2009

"Wonderful experience. The tiger and lion safari were outstanding. Keep up the good works. Also an educational experience. Didn't know much about pangolins. The Director, Asst. Director and their team are truly dedicated and enjoying their works. May Nandankanan become even more famous"

*Mrs. Naini Jaicelon*  
Advisor  
Planning Commission  
18.10.2009

"It was a great pleasure to visit Nandankanan today. Extremely beautiful and immense learning. Congratulations to all the concerned person to make this place so amuging"  
All the best

*Swun, Chisy & Nausher from Mumbai*  
06.05.2009

"It was a great pleasure to visit the Nandankanan today along with the members of Rotary Club of Bhubaneswar. The Director have taken adequate personal interest for the development of this park which have made it one of the best in the country. A clear and well maintained Zoological Park makes Orissa proud

Rotary Club of Bhubaneswar serving the need of the visitors have rightly provided safe Drinking water in side the park. I have great pleasure and honour to inaugurate one of such drinking water project today during my visit to this place. I commend the efforts of the Rotarians of the Rotary Club of Bhubaneswar and the management of the Nandankanan having coming together to cater to thirst of the visitors. I congratulate them and wish them all the best for the future "

*Dillip K. Pattanaik*  
Dist. Governor, Rotary International  
13.04.2009

"I am offering my remarks separately salient features are

1. Health and care of animals is exceptionally good. Their needs to use established by statistics. It will be useful for other zoo-park.
2. Freshness, quality of food, quality is very good.
3. Management of staff (man management) and public is praise worth. I found visitors behaving properly.
4. This park manages lot of varieties. The contribution and commitment of Dr. Panda is praise worth.

*A.N. Balal*  
PCCF (Rtd), Maharashtra  
07.11.2009

"I got an opportunity to have quick round of the zoo well-fed and kept animals and excellent gardens. The staff has been very dedicatedly maintaining the zoo and WLS for conserving ex-situ and in-situ biodiversity and nicely entertaining the nature lovers. Sh. A.K. Mishra, Assistant Director has thoroughly knowledge about each and every animal and neck and corner of the zoo. My hearty congratulation and best wishes to all the personnel of the zoo".

*A.K. Goyal*  
Joint Secretary, MoEF, New Delhi  
16.12.2009

"What a wonderful experience. Never thought we will have an oppotunity to see white tigers so close. Everything is so beautiful, so eye catching. My hats off to those who has kept Nandankanan Zoo so neat, clean and beautiful. Congratulation and best wishes to all of you. Keep up the good work.

*Arun & Sa Chakraborty*  
Montreal, Canada

“Nandankanan continues as a refreshingly green and exhilarating experience as ever. In an age of ecological awareness, continues to inspire and excellent, all of us enjoyed the visit immensely.

*S. Bandopadhyaya, IAS (Retd.)  
Former Secretary & Commissioner  
Forest & Environment Department, Orissa  
04.12.2009*

It an opportunity to visit Nandankanan with my family. They were reluctant to come, but after visiting the zoo they say is a great experience. The health of animals, is exceptionally good. It appears that they are in their natural place. This place is neat clean. Upkeep of area is upto the mark-extremely beautiful. The hard work and effort of all concerned is very much visible. Commendable job. Good team work under the able leadership of zoo Director-Dr. S. Panda.

*Sanjaya Singh, IFS  
Spl. Secretary, Forests, UP  
04.02.2010*

“My family, my colleagues and I have had today one of the most wonderful experience at Nandankanan. The day was made specially memorable by personal guidance of the park by Sri Mishraji. The park is probably among the best I have seen so far. The aquarium also deserves special mention here for its design, display and maintenance. All animals appear healthy and well maintained. I wish the staff of the park very best in their sincere endeavours.

*Ambekar Eknath, Ph.D  
Director, CIFA, Kausalyagang  
07.02.2010*



“This was our first visit to Nandankanan. Having seen few other important zoos, we can say that this is one of the best maintained zoo in the country. All the animals seen were very healthy and in good temperament. One of the best thing seen was the cleanliness of the enclosures and the discipline and behaviour of keepers. The management and dedication of officers is praise worth. Mr. Arun Mishra is very dedicated officer who is well versed with the management of the park and also the touch with the animals and the staff. Aquarium is one of very attractive place to visit. We wish to convey our best wishes to the park management for keeping this excellent status of the zoo. Also many thanks to Mr. Mishra, Director of the park and all staff for making this visit a memorable one.

We enjoyed visit to Nandankanan and wish to visit, it again and again. It was a wonderful experience. Thanks a lot.

*Anil Kumar Bhardwaj  
Prof. Wildlife Institute of India, Dehradun  
23.03.2010*

# Health Care



Highest standards of animal husbandry and veterinary care have been the priority of Nandankanan Biological Park. Preventing disease is at the heart of the Zoo's animal health care program and involves monitoring of an animal's health from the moment it is born or arrives at the zoo. To achieve this three full time veterinary surgeons provide veterinary services to the captive animals and birds with specialist support from the Orissa Veterinary College and input from an array of experts. A full-fledged zoo hospital is located inside the park. A veterinary surgeon resides inside the Park to attend to the emergencies. Five members "Technical Committee" constituted by Government of Orissa regularly monitor and review the health care and related matters. The committee meets at regular intervals to take stock of the health care and animal welfare. A close liaison is maintained with the Orissa Veterinary College (OVC) and the services of "Health Committee" from OVC are requisitioned in case of emergency. The focus is on preventive medicine, following a strict vaccination and de-worming protocol to keep all animals at peak health.

## Infrastructure at Zoo Hospital

The Zoo Hospital is equipped with the following infrastructures;

- A well equipped operation theatre backed by the generator, oxygen supply gadget and an x-ray unit.
- A spacious isolation ward to house the sick and injured animals for treatment.
- A quarantine house to house the newly acquired animals and the sick animals with contagious diseases.
- A microbiological lab has been set up to carry out the culture and anti-biotic sensitivity of different pathological samples for easy diagnosis and effective treatment of ailing animals.
- An incubation unit to assist the incubation of eggs of exotic and indigenous rare and endangered species of birds.

- A full-fledged anti-depredation unit equipped with the equipments and drugs for chemical immobilization is operating from the Nandankanan Biological Park which meets the needs of the entire state.

## Collaboration with the Orissa Veterinary College

A MOU is signed with the Orissa Veterinary College, Bhubaneswar for captive use of the **Center for wildlife health**. The center is equipped with onsite ultrasound and X-ray facility backed by a state of the art clinical laboratory. There have been some interesting veterinary breakthrough this year, and these would not have been possible without the support of the institutions like Center for wildlife health and significant contributions from a number of eminent experts.

The **Centre for Wildlife Health** was initially set up in the Veterinary College, Orissa University of Agriculture and Technology, Bhubaneswar as a regional center with the financial assistance from the Central Zoo Authority, New Delhi. It was renamed as 'Centre for Wildlife Health' since from April, 2007 subsequent upon the bipartite MOU signed between the Forest Department, Govt. of Orissa and Orissa University of Agriculture and Technology, Bhubaneswar. Now the centre receives an amount of Rs.1.75 lakhs per annum from the Director Nandankanan, towards recurring expenditure. The prime objective of the centre is to extend diagnostic facilities and advance treatment to the wild animals and birds of Nandankanan Biological Park. The centre is well equipped to carry out haematobiochemical, microbiological, parasitological, histopathological examinations. Some of the successful cases dealt by the center during the period of report are; septic laminitis in a zebra, chronic abscess with complementary lameness in a white tiger, trypanosomiasis in a male Jungle cat etc.





## Number and types of intervention by the veterinary wing of the zoo

| Sl. No.            | Activities                  | Number cases dealt |
|--------------------|-----------------------------|--------------------|
| 1                  | Cases treated               | 4050               |
| 2                  | Surgeries performed         | 15                 |
| 3                  | De-worming                  | 2300               |
| 4                  | Chemical immobilization     | 32                 |
| 5                  | Screening of blood smears   | 78                 |
| 6                  | Bio-chemical assays         | 11                 |
| 7                  | Bacteriological examination | 17                 |
| <b>Vaccination</b> |                             |                    |
| 1                  | Fel-o-vax                   | 62                 |
| 2                  | Triquin                     | 152                |
| 3                  | F.M.D.                      | 17                 |
| 4                  | H.S.V.                      | 06                 |
| 5                  | Anthrax                     | 08                 |

### Prophylactic protocol

A set of protocol are hermitically followed as a prophylactic measure against; Trypanosomiasis, Feline-pan-leucopenia and other blood borne diseases. In addition to this a de-worming protocol is followed for management of the ecto and endo parasitic infestation in captive animals. Following prophylactic protocol is observed in the park.

- Annual Fel-O-Vax vaccination to Tigers, Lions, Leopards and Jaguars.
- Administration of Triquin as a prophylactic measure against Trypanosomiasis to Tigers, Lions, Leopards and Jaguar at quarterly interval.
- Body spray with cypermethrine at 2 months interval against ticks, flies & other vectors in case of big cats.
- K-Orthrine sprays in enclosures at two months intervals.
- Screening of the faecal samples of all Nandankanan Biological Park inmates and de-worming at 3 months interval.
- Periodical screening of blood samples.

## Significant Achievements in health care front

### Tranquilisation of Adult Female Chimpanzee

In early morning of 14th October 2009, the adult female chimpanzee (Pampata) was noticed carrying the just born baby chimpanzee of her daughter 'Purnima'. This unwarranted/unexpected situation happened due to lack of maternal instinct of primiparous 'Purnima' towards possession of her newborn baby for maternal care. On the other side 'Pampatta' was also not in a mood to share the baby with any body, not even with 'Punima'. The situation was continuously monitored by the zoo veterinarians right from the early morning till late afternoon. A lot of persuasion, provocation and intimidation were made for transfer/handing over of new born to its mother. But every attempt for nearly 12 hours became futile. Signs of severe dehydration and weakness were observed in the baby in absence of mother's milk. The adult female chimp 'Pampatta' had to be tranquilised with ketamine hydrochloride by a blow pipe to recover the baby. Thus the new born baby was successfully separated from the adult female chimpanzee for hand rearing. The total episode of neonatal care was performed under the guidance of the zoo veterinarians including assessment of its health status on daily basis. Thus the life of the baby chimp was saved providing additional glamour to the apes' population inside the zoo.

### Population control of 'Blue Bull' and 'Spotted Deer'

The population growth in blue bull and spotted deer under captivity has been a constant problem in every zoo across the country. As a token of special drive initiated by the zoo vets for population control of aforesaid two species, one blue bull and three spotted deer were successfully vasectomized inside their enclosures under sedation. Vasectomy of many more individuals from the above two species were in the pipe line looking at the success rate of such practice for effective population control in the zoo.

### Incidence of chole cystitis in Sloth Bear

One 19 year old captive adult female sloth bear exhibited chronic inappetance following constant enteritis for one month. The ailing sloth bear was periodically treated with antibiotics, multivitamins and liver extract preparations both orally as well as parenterally without any remarkable improvement in its condition. It was decided to go for non-invasive clinical examination of the prevailing condition with

a view to unveil the cause(s). Hence the sloth bear was tranquilized and subjected to inflammation of gall bladder (cholecystitis) through ultrasonography. Accordingly specific treatment against such hepatopathy was extended through parenteral administration of Vit. K with oral preparations of hepatobiliary drugs like Ursodeoxy cholic acid (Udiliv) and Silymarin. The ailing bear recovered from the complication after three months long treatment and regained its normal appetite.

#### **Artificial hatching of water monitor lizard eggs**

Nandankanan possesses two pairs of male and female water monitor lizard rescued from the mangrove forest of Rajnagar during August 2009. One adult female laid 11 eggs

which were embedded inside the sand bed of the enclosure for natural incubation. On the next day it was noticed that one male burrowed the incubated spot and spoiled two fertile eggs. Sensing further invasion by the male in the coming days the remaining 9 fertile eggs were immediately transferred to another enclosure for safe incubation. The fertile eggs were immediately transferred to another enclosure for safe incubation. The incubated pit in the new area was created in the sand bed of same depth as it was naturally done by the female lizard in the old enclosure. After almost 10 months of incubation in a safe enclosure 6 babies hatched out naturally from the eggs. The hatchlings were hand reared in a small cage with boiled egg paste and minced fish as major food.









**Summary of Birth / Acquisition of Animals of Nandankanan Zoo  
from 01.04.2009 to 31.03.2010**

| <b>Sl. No.</b> | <b>Date of birth</b> | <b>Name of Species</b> | <b>Sex</b> |
|----------------|----------------------|------------------------|------------|
| <b>Mammals</b> |                      |                        |            |
| 1/2.           | 02.04.2009           | Spotted Deer           | 1M+1F      |
| 3/5.           | 12.04.2009           | Spotted Deer           | 2M+1F      |
| 6/8.           | 27.04.2009           | Spotted Deer           | 3M         |
| 9/11.          | 07.05.2009           | Spotted Deer           | 1M+2F      |
| 12/16.         | 21.05.2009           | Spotted Deer           | 3M+2F      |
| 17/19          | 07.08.2009           | Spotted Deer           | 1M+2F      |
| 20.            | 18.04.2009           | NCT Sara               | 1 F        |
| 21/22          | 18.04.2009           | Jackal                 | 1M+1F      |
| 23.            | 21.05.2009           | Hog Deer               | 1M         |
| 24.            | 24.05.2009           | Barking Deer           | 1F         |
| 25.            | 04.06.2009           | Barking Deer           | 1F         |
| 26.            | 07.08.2009           | Barking Deer           | 1M         |
| 27.            | 26.05.2009           | Swamp Deer             | 1F         |
| 28.            | 11.06.2009           | Hippopotamus           | 1M         |
| 29.            | 05.07.2009           | Hippopotamus           | 1F         |
| 30.            | 17.07.2009           | Indian Pangolin        | 1M         |
| 31/32.         | 31.08.2009           | Spotted Deer           | 2F         |
| 33.            | 12.09.2009           | Swamp Deer             | 1F         |
| 34.            | 12.09.2009           | Pangolin               | 1F         |
| 35.            | 18.09.2009           | Swamp Deer             | 1U/S       |
| 36/37          | 19.09.2009           | Barking Deer           | 2U/S       |
| 38.            | 20.09.2009           | Hog Deer               | 1U/S       |
| 39.            | 26.09.2009           | Hippopotamus           | 1U/S       |
| 40/41.         | 10.10.2009           | Spotted Deer           | 2F         |
| 42.            | 14.10.2009           | Chimpanzee             | 1M         |
| 43.            | 21.10.2009           | Sambar                 | 1U/S       |
| 44/45          | 21.10.2009           | Barking Deer           | 2U/S       |
| 46/47          | 01.11.2009           | Spotted Deer           | 2F         |
| 48/49          | 12.11.2009           | Nilgai                 | 1M+1F      |
| 50.            | 01.12.2009           | Sambar                 | U/S        |
| 51/55          | 01.01.2010           | Spotted Deer           | 3M+2F      |
| 56.            | 11.01.2010           | Spotted Deer           | 1F         |
| 57.            | 12.01.2010           | Spotted Deer           | 1M         |
| 58/59          | 17.01.2010           | Spotted Deer           | 2F         |
| 60.            | 18.01.2010           | Hog Deer               | 1U/S       |
| 61/62          | 27.01.2010           | Spotted Deer           | 2M         |
| 63/64          | 27.01.2010           | Spotted Deer           | 1M+1F      |
| 65/66          | 06.02.2010           | Spotted Deer           | 2F         |



| Sl. No.         | Date       | Date of birth        | Name of Species |
|-----------------|------------|----------------------|-----------------|
| 67/69           | 18.02.2010 | Spotted Deer         | 3M              |
| 70/71           | 18.02.2010 | Nilgai               | 2U/S            |
| 72/73           | 22.02.2010 | Leopard              | 2U/S            |
| 74/76           | 28.02.2010 | Spotted Deer         | 2M+1F           |
| 77/81           | 01.03.2010 | Tiger                | 1M+4F           |
| 82/84           | 08.03.2010 | Spotted Deer         | 2M+1F           |
| 85/87           | 13.03.2010 | Spotted Deer         | 3F              |
| 88/89           | 13.03.2010 | Barking Deer         | 2U/S            |
| 90/93           | 16.03.2010 | Spotted Deer         | 2M+2F           |
| 94/97           | 21.03.2010 | Spotted Deer         | 1M+3F           |
| 98/100          | 25.03.2010 | Spotted Deer         | 3F              |
| <b>Birds</b>    |            |                      |                 |
| 01/05           | 05.06.2009 | White IBIS           | 5U/S            |
| 06/15           | 19.09.2009 | Budgerigar           | 10U/S           |
| 16/25           | 13.12.2009 | Budgerigar           | 10U/S           |
| 26/27           | 13.12.2009 | Cockatiel            | 2U/S            |
| 28/33           | 01.01.2010 | Zebra Finch          | 6U/S            |
| 34/35           | 05.01.2010 | Java Sparrow         | 2U/S            |
| 36/45           | 23.01.2010 | Budgerigar           | 10U/S           |
| 46/49           | 23.01.2010 | Cockatiel            | 4U/S            |
| 50/64           | 27.01.2010 | Budgerigar           | 15U/S           |
| 65/66           | 09.03.2010 | Barn Owl             | 2U/S            |
| 67/71           | 11.03.2010 | Zebra Finch          | 5U/S            |
| 72/79           | 16.03.2010 | Budgerigar           | 8U/S            |
| 80/83           | 17.03.2010 | Budgerigar           | 4U/S            |
| <b>Reptiles</b> |            |                      |                 |
| 01/06           | 07.07.2009 | Fresh Water Turtle   | 6U/S            |
| 07/12           | 16.08.2009 | Gharial              | 6U/S            |
| 13/17           | 01.12.2009 | Soft Shell Turtle    | 5U/S            |
| 18/19           | 18.02.2010 | Star Tortoise        | 2U/S            |
| 20/23           | 14.03.2010 | Gharial              | 4U/S            |
| 24/29           | 17.03.2010 | Soft Shell Turtle    | 6U/S            |
| 30/31           | 25.03.2010 | Water Monitor Lizard | 2U/S            |

## Abstract

|                    | Mammal     | Bird      | Reptile   | Total      |
|--------------------|------------|-----------|-----------|------------|
| Birth              | 96         | 83        | 31        | 210        |
| Still birth        | 01         | --        | --        | 01         |
| Acquisition        | 03         | --        | --        | 03         |
| <b>Grand Total</b> | <b>100</b> | <b>83</b> | <b>31</b> | <b>214</b> |

## Birth & Death of captive animals for the last five years

Total stock position from 01.04.2005 to 31.03.2010

### 2005-2006

| Types        | Stock as on 01.04.2005 | Birth      | Acquisition | Death     | Disposal  | Stock as on 31.03.2006 |
|--------------|------------------------|------------|-------------|-----------|-----------|------------------------|
| Mammals      | 437                    | 59         | 03          | 50        | --        | 449                    |
| Birds        | 574                    | 114        | 01          | 32        | --        | 657                    |
| Reptiles     | 107                    | --         | --          | 08        | 05        | 094                    |
| <b>Total</b> | <b>1118</b>            | <b>173</b> | <b>04</b>   | <b>90</b> | <b>05</b> | <b>1200</b>            |

### 2006-2007

| Types        | Stock as on 01.04.2006 | Birth      | Acquisition | Death     | Disposal  | Stock as on 31.03.2007 |
|--------------|------------------------|------------|-------------|-----------|-----------|------------------------|
| Mammals      | 449                    | 54         | 09          | 40        | 11        | 461                    |
| Birds        | 657                    | 60         | 04          | 22        | 44        | 655                    |
| Reptiles     | 94                     | -          | 04          | 08        | -         | 090                    |
| <b>Total</b> | <b>1200</b>            | <b>114</b> | <b>17</b>   | <b>70</b> | <b>55</b> | <b>1206</b>            |

### 2007-2008

| Types        | Stock as on 01.04.2007 | Birth      | Acquisition | Death     | Disposal  | Stock as on 31.03.2008 |
|--------------|------------------------|------------|-------------|-----------|-----------|------------------------|
| Mammals      | 461                    | 73         | 10          | 34        | 02        | 508                    |
| Birds        | 655                    | 58         | 02          | 21        | 06        | 688                    |
| Reptiles     | 090                    | 12         | 02          | 05        | 04        | 095                    |
| <b>Total</b> | <b>1206</b>            | <b>143</b> | <b>14</b>   | <b>60</b> | <b>12</b> | <b>1291</b>            |

### 2008-09

| Types        | Stock as on 01.04.2008 | Birth      | Acquisition | Death     | Disposal  | Stock as on 31.03.2009 |
|--------------|------------------------|------------|-------------|-----------|-----------|------------------------|
| Mammals      | 508                    | 89         | 05          | 27        | 08        | 567                    |
| Birds        | 688                    | 77         | 02          | 14        | 10        | 743                    |
| Reptiles     | 095                    | 18         | 00          | 03        | 04        | 106                    |
| <b>Total</b> | <b>1291</b>            | <b>184</b> | <b>07</b>   | <b>44</b> | <b>22</b> | <b>1416</b>            |

### 2009-10

| Types        | Stock as on 01.04.2009 | Birth      | Acquisition | Death     | Disposal  | Stock as on 31.03.2010 |
|--------------|------------------------|------------|-------------|-----------|-----------|------------------------|
| Mammals      | 567                    | 97         | 03          | 31        | 2         | 634                    |
| Birds        | 743                    | 83         | --          | 12        | 2         | 812                    |
| Reptiles     | 106                    | 31         | 00          | 03        | --        | 134                    |
| <b>Total</b> | <b>1416</b>            | <b>211</b> | <b>3</b>    | <b>46</b> | <b>04</b> | <b>1580</b>            |

**Summary of death and disposal of captive animal of Nandankanan Zoo  
from 10.04.2009 to 31.03.2010**

| Sl.           | Date       | Animal                       | Age         | Sex | Cause of Death   |
|---------------|------------|------------------------------|-------------|-----|--|
| <b>Mammal</b> |            |                              |             |     |  |
| 1             | 19.04.2009 | Indian Pangolin              | Adult       | F   | Pneumonia  |
| 2             | 19.04.2009 | WCT Bhagat                   | Adult       | M   | Transferred to Van Vihar National Park,<br>on exchange programme |
| 3.            | 19.04.2009 | WCT Lilita                   |             | F   | - do -   |
| 4             | 21.04.2009 | Nilgai                       | 2 yrs       | M   | Infighting   |
| 5             | 26.05.2009 | Swamp Deer                   | Adult       | F   | Head injury subsequent drowning                                  |
| 6             | 01.06.2009 | Leopard (Madhu)              | 21 yrs      | M   | Senility   |
| 7             | 19.06.2009 | Nilgai                       | 4 yrs       | M   | Internal Hemorrhage due to trauma                                |
| 8             | 03.07.2009 | Swamp Deer                   | Adult       | M   | Ethmoid tumor  |
| 9             | 04.07.2009 | Sloth Bear                   | 8 yrs       | M   | Haemorrhagic gastro enteritis                                    |
| 10            | 05.07.2009 | Hippopotamus                 | Still Birth | F   | Still Birth  |
| 11            | 30.07.2009 | Spotted Deer                 | Adult       | M   | Perforation of thoracic cavity due to infighting                 |
| 12            | 03.08.2009 | NCT Rohit                    | 17 yrs      | M   | Malignant tumor  |
| 13            | 04.08.2009 | Swamp Deer                   | Adult       | F   | Ethmoid tumor  |
| 14            | 13.08.2009 | Barking Deer                 | Adult       | M   | Infighting   |
| 15            | 22.08.2009 | Sloth Bear (Jhilli)          | 8 yrs       | F   | Pulmonary Tuberculosis   |
| 16            | 29.08.2009 | Swamp Deer                   | Adult       | F   | Ethmoid Tumor  |
| 17            | 16.09.2009 | NCT Sita                     | 9 yrs       | F   | Suppurative wound associated with enteritis                      |
| 18            | 13.11.2009 | Nilgai                       | Day old     | F   | Mother's rejection   |
| 19            | 03.12.2009 | Nilgai                       | 22 days     | M   | Snake bite   |
| 20            | 24.12.2009 | Grant's Zebra (Sukanta)      | 8 yrs       | M   | Septicemia resultant to internal abscess in muscle               |
| 21            | 09.01.2010 | Spotted Deer                 | 12 yrs      | M   | Infighting   |
| 22            | 20.01.2010 | Mithun                       | 5.5 yrs     | F   | Peritonitis with hepatitis                                       |
| 23            | 25.01.2010 | Hamadryas Baboon             | 2 yrs       | F   | Tetanus resultant to biting injury by male                       |
| 24            | 10.02.2010 | Hippopotamus                 | 3.5 yrs     | M   | Infighting   |
| 25            | 23.02.2010 | Leopard cub                  | Day old     | M   | Mother's rejection   |
| 26            | 24.02.2010 | Leopard cub                  | Day old     | M   | Mother's cannibalism   |
| 27            | 28.02.2010 | Himalayan Black Bear         | 27 yrs      | M   | Senility   |
| 28            | 04.03.2010 | Tiger cub                    | 3 days      | F   | Mother's rejection   |
| 29            | 06.03.2010 | White Tiger Jagdish          | 12 yrs      | M   | Hepatitis with multiple hydatid cyst in liver                    |
| 30            | 12.03.2010 | Spotted Deer                 | 10 yrs      | F   | Shock resultant to Dystokia                                      |
| 31            | 14.03.2010 | Tiger cub                    | 14 days     | F   | Traumatic Injury   |
| 32            | 24.03.2010 | Indian Pangolin              | 2.5 yrs     | F   | Cause couldn't ascertained as carcass putrified                  |
| 33            | 24.03.2010 | Hog Deer                     | 8 yrs       | M   | Septicemia   |
| <b>Birds</b>  |            |                              |             |     |  |
| 1             | 26.04.2009 | Koel                         | Adult       | M   | Predator bite  |
| 2             | 28.04.2009 | Indian Common Peafowl        | Adult       | F   | Fibrinus pericarditis and hepatitis                              |
| 3             | 07.05.2009 | Blossom Headed Parakeet      | 21 yrs      | F   | Hepatitis with senility  |
| 4             | 06.06.2009 | Bhutan Grey Peacock Pheasant | 20 yrs      | F   | Senility   |

| Sl.             | Date       | Animal                | Age    | Sex   | Cause of Death                          |
|-----------------|------------|-----------------------|--------|-------|---|
| 5               | 24.06.2009 | Diamond Dove          | Adult  | F     | Hepatitis                               |
| 6               | 18.07.2009 | Bengali Finch         | Adult  | M     | Hepatitis                               |
| 7               | 14.09.2009 | Yellow Backed Lorry   | 26 yrs | F     | Hepatitis associated to senility        |
| 8               | 28.12.2009 | Spotted Munia         | Adult  | M     | Pneumonia                               |
| 9               | 05.01.2010 | Spotted Munia         | Adult  | F     | Pneumonia                               |
| 10              | 06.01.2010 | Diamond Dove          | Adult  | F     | Pneumonia                               |
| 11              | 14.03.2010 | Black Headed Munia    | Adult  | M     | Predation                               |
| 12              | 22.03.2010 | Diamond Dove          | Adult  | M     | Hepatitis                               |
| 13              | 26.07.2009 | Green Winged Macaw    | Adult  | 1M+1F | Theft                                   |
| <b>Reptiles</b> |            |                       |        |       |   |
| 1               | 26.07.2010 | Morelet's Crocodile   | 20 yrs | F     | Lactic acidosis due to capture myopathy |
| 2               | 03.12.2009 | Common Monitor Lizard | Adult  | F     | Pneumonia                               |
| 3               | 09.01.2010 | Land Monitor Lizard   | Adult  | F     | Hepatitis                               |

### Abstract

|             | Mammal | Bird | Reptile | Total |
|-------------|--------|------|---------|-------|
| Death       | 30     | 12   | 03      | 45    |
| Still birth | 01     | --   | --      | 01    |
| Disposal    | 02     | 02   | --      | 04    |

### Deaths of captive animals in Nandankanan Zoological Park during past five year

| Year      | Total stock<br>as on 1 <sup>st</sup> April | Number of Deaths |       |          |       |
|-----------|--|------------------|-------|----------|-------|
|           |  | Mammals          | Birds | Reptiles | Total |
| 2005-2006 | 1200                                       | 50               | 32    | 8        | 90    |
| 2006-2007 | 1206                                       | 40               | 22    | 8        | 70    |
| 2007-2008 | 1291                                       | 35               | 21    | 4        | 60    |
| 2008-2009 | 1416                                       | 27               | 14    | 3        | 44    |
| 2009-2010 | 1580                                       | 31               | 12    | 3        | 46    |

### Animal 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 Biological Park. The zoo has a central commissary and a zoo kitchen to cater to the needs of the captive animals and birds. The commissary is headed by a Range Officer. To achieve the quality supply of feed a captive slaughter house is established within the park and a fodder farm is also developed to achieve self sufficiency in fodder production to meet the nutritional requirements of the herbivores.

### 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 post mortem examination 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 is 605 kilogram.



### Month wise production of fodder from the captive fodder farm (in quintals)

| Month        | NB-21         | Para grass     | Common grass   | Cowpea       | Oat grass     | Maize tree   | Berseem grass | Green maize | African tall fodder maize | Green sag    | Misc. fodder  |
|--------------|---------------|----------------|----------------|--------------|---------------|--------------|---------------|-------------|---------------------------|--------------|---------------|
| 04/2009      | 60.50         | 91.00          | 475.70         | 7.95         |               |              |               |             |                           |              |               |
| 05/2009      | 86.00         | 71.90          | 620.80         | 46.76        |               |              |               |             |                           |              |               |
| 06/2009      | 100.70        | 114.50         | 542.20         | 7.45         |               |              |               |             |                           |              |               |
| 07/2009      | 102.30        | 196.14         | 505.82         | 0.00         |               |              |               |             |                           |              |               |
| 08/2009      | 102.30        | 276.30         | 392.60         | 0.00         |               |              |               |             |                           |              |               |
| 09/2009      | 99.00         | 232.72         | 379.20         | 0.00         |               |              |               | 0.96        |                           |              |               |
| 10/2009      | 95.40         | 208.93         | 395.90         | 0.00         |               | 25.00        |               | 1.06        | 18.88                     |              | 65.520        |
| 11/2009      | 99.00         | 267.16         | 384.00         | 0.00         |               |              |               |             |                           | 2.342        |               |
| 12/2009      | 117.80        | 269.21         | 395.05         | 0.00         |               |              | 7.00          |             |                           | 0.511        | 0.071         |
| 01/2010      | 14.30         | 208.11         | 374.95         | 0.00         | 66.25         |              | 37.00         |             |                           |              |               |
| 02/2010      | 7.80          | 138.50         | 233.30         | 0.00         | 44.55         |              | 44.50         |             |                           | 2.293        |               |
| 03/2010      | 83.00         | 205.00         | 301.50         | 33.00        |               |              |               |             |                           | 0.802        | 0.097         |
| <b>TOTAL</b> | <b>968.10</b> | <b>2279.47</b> | <b>5001.02</b> | <b>95.16</b> | <b>110.80</b> | <b>25.00</b> | <b>88.50</b>  | <b>2.02</b> | <b>18.88</b>              | <b>5.948</b> | <b>65.688</b> |

The total production of fodder in the fodder farm during the year 2009-10 was 8660.50 quintals.

#### Feed distribution center

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 are thoroughly cleaned and disinfected before distribution. The feed items received are weighed and distributed in prescribed quantities to various animal housing. 84 items of feed is collected daily to meet the nutritional requirements of the 124 species of animal and birds.

#### Zoo kitchen

A zoo kitchen is part of the commissary. The kitchen staffs are responsible for preparing specialized diets for a number of animals at the zoo every day of the year. Special cuisines are made for Bear, Primates, Wild pigs and cassowary every day at the zoo kitchen.

#### Seasonal feed

To supplement the feed seasonal fruits and vegetables like water melon, sugarcane, green coconut and Pine apples are included during summer, during winter green pea, ripe papaya, spinach, amla, Guava and orange are added to the normal supply.

#### Lawns & Gardens

Our magnificent garden continued to be recognized by visitors and other plant lovers. We own champion trophy with highest point with institutions category and other prizes in different categories in the 22<sup>nd</sup> State/National level Flower show competition, 2010 organised by Plant Lovers Association on 9<sup>th</sup> & 10<sup>th</sup> January, 2010 at Regional Plant Resource Centre, Bhubaneswar.

The park was awarded with champion trophy and prizes in different categories in the 24<sup>th</sup> Annual Flower Show & Garden competition organized by Lioness Club, Cuttack on 16<sup>th</sup> & 17<sup>th</sup> January, 2010.



## Research

### *Improving care through understanding*

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 the captive animals. To ensure optimal outcomes collaboration with a number of organizations 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 and various granting bodies. The research findings would further increase our expertise in the management of captive animals.

#### **Research on Ecto and Endo parasites of captive animals of Nandakanan zoo.**

The research Project on Ecto and endo parasites of captive animals of Nandankanan Zoo has been completed in collaboration with Centre for Wildlife Health ,Orissa Veterinary College. This project was supported by the Central Zoo Authority under the small grant fellowship programme. The primary objectives of this project were to study the season wise prevalence of parasitic infection in zoo animals, comparative evaluation of efficacy of anthelmintic drugs and study on the effectiveness of different control measures that can be adopted to reduce recurrence of infestation. During the period of study parasites have been identified by studying the morphology, micrometry of eggs and also by the culture of larvae.

Comparative study of efficacy of drugs has also been completed. Effective control measures adopted to prevent recurrence of parasitic infestation have been identified. Based on the results of the study, a protocol for management of ecto-endo parasites in the zoos has been developed.

A project entitled, 'Ecto and endo parasites of captive animals of Nandankanan Zoo' was jointly operated by the Nandankanan Zoo, Govt. of Orissa Veterinary College, Bhubaneswar during April 2007 - March 2010. The Central Zoo Authority, New Delhi rendered the financial assistance.

The results of the study revealed that the prevalence of helminthic infection, either single or mixed, in large carnivores was highest among all the mammals of zoo. The parasites identified during the faecal examination were *Toxascaris*, *Ancylostoma*, *Paramphistomum*, *Strongyloides*, *Paragonimus*, *Trichuris*, *Ascaridia*, *Capilaria*, *Isospora* and *Eimeeria* spp. Anthelmintics found efficacious during the comparative study were Ivermectin (Ivermectol), Levamisole (Dewormis), Pyrantel pamoate (Nemocid) and Albendazole (Valbazen). External application of cypermethrin (Clinar) or deltamethrin (Butox) in the form of spray and subcutaneous injection ivermectin (Hitek) was found effective against tick infestation in tigers. Change of top soils from the tiger enclosures. The final project report containing relevant recommendations pertaining to effective management of the parasitic diseases under zoo condition has been submitted to the Central Zoo Authority, New Delhi.





## Conservation

Modern zoos are not places for displaying the animals, they are about people and the journey towards conservation action. Nandankanan Biological Park is poised to become a foremost conservation organization to deliver the best possible conservation outcomes by changing the perception of the visitors about wildlife and the natural environment and inspiring them to take positive action in this direction. With an increasing number of endangered species and reducing wild habitat, zoos are uniquely positioned to play a vital role in Ex-situ conservation that can be accomplished through conservation breeding.



The maintenance of species in captivity in zoos or the *ex situ* conservation is the only hope for the survival of some species where the threat to their existence in the wild is now extreme. This conservation method, however, serves many other purposes such as allowing more control over breeding in order to avoid inbreeding, increased reproductive rate, providing educational and public awareness conservation need of the endangered species. The conservation breeding provides a means for conserving species establishing captive populations for saving species from extinction. This is an important contribution of modern zoos to conservation. Nandankanan Biological Park initiated an ambitious conservation breeding programme for Indian Pangolin (*Manis crassicaudata*).

### Conservation Breeding Programme of Indian Pangolin

Out of eight species of pangolins found in the world, India harbours only two species i.e. Indian Pangolin (*Manis crassicaudata*) and Chinese Pangolin (*Manis pentadactyla*). Indian Pangolin distributed throughout peninsular India where as the later found in North East Indian and lower Himalayas. Indian Pangolins are medium sized mammals (105 - 120 cm length) having scales (modified hairs) around the body. Only the ventral part of the body, lower part of head and inner side of the limbs are without scales which help them to coil around themselves when threatened. There are 11-13 rows of scales around the body and a total of 46 scales in the mid-dorsal line from neck to tail tip. They have very stout short limbs. The forelimbs are armoured with long curved claws which help them in digging out their own burrows, termite mounds and leaf nest of red weaver ants. Indian pangolins are devoid of teeth and lick the ants and termites from their nests with their sticky tongue which is about a feet long. Indian pangolins are mostly solitary and nocturnal in nature. They have very good sense of smell and can locate their prey in dark nights. They used to live inside their own burrows during the day time and come outside at the day break for foraging. They use their prehensile tail for climbing the trees for the sake of red ants. When threatened, they coil around themselves with their protective scales and produce only hissing sound.

The reproductive behavior of this species is not studied intensively due to its secretive and nocturnal nature. The female pangolin gives birth to single young but occasionally two. Births were recorded during the months of January, April, July and November. They exhibit very strong parental care; carrying their baby in their back. When danger approaches, mother coils around the young ones with their protective body keeping the young at ventral side. The major threats to these species are habitat loss and poaching for their meat and scales for medicinal purposes. In order to give stability to their dwindling population, they are highly protected under Schedule – I of Wildlife (Protection) Act, 1972 and Appendix – II of CITES (Convention on International Trade in Endangered Species).

NKZP has been a premier conservation institution with its unique ability and commitment to effective ex-situ conservation of wildlife. Conservation breeding has been the major thrust of NKZP. It has also the distinction of captive breeding successful rearing of highly threatened species like **Indian Pangolin** (*Manis crassicaudata*). Recently a customized breeding enclosure is designed with appropriate enrichments. The Conservation breeding centre for Indian pangolin is established in off-exhibit area of Nandankanan during 2009. There are six enclosures installed with infra-red sensitive CCTV cameras to capture video at the night time which helps in recording the behavioural data. The prime objectives of the conservation breeding centre are as follows:

- 1) To initiate ex-situ breeding of physically, genetically and behaviorally healthy pangolin.
- 2) Systematic data collection on the behavioural, social and reproductive aspects of the species.
- 3) Identification of the Protected Area having wild population of the proposed species i.e, re-introduction site.
- 4) Developing husbandry protocol of Indian Pangolin.
- 5) Develop a scientific data base on rearing and breeding of the Indian Pangolin.



## Education

*“You can teach a student a lesson for a day; but if you can teach him to learn by creating curiosity, he will continue the learning process as long as he lives.”*

*~ Clay P Bedford*

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 1.8 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 etc.

### **Celebration of Birthday of Tigers**

It was a different day for the Nandankanan Biological Park. The atmosphere was charged with a festive mood. It was good news for inmates of Nandankanan Zoo, they too now celebrate their birthday with the visitors. The zoo authority celebrated the birthday of zoo born white tigers inside their enclosures. This was done with an objective to heighten the awareness about the conservation need of the tiger in wild whose population is declining sharply and to boost the image of the Zoo animals in the eyes of the visitors. Zoos are uniquely positioned to further the effectively communicate the conservation message to the visitors. This also confirms to the principal objective of the Zoo Management i.e. conservation and education. Birth Day of white tigers “Rishi, Sitesh & Prachi” was observed on 01.08.2008 in Nandankanan amidst school children and visitors.





### Observation of Elephant day

The Nandankanan Biological Park in collaboration with the Chandaka Wildlife Division, Nature and Wildlife Conservation Society, Orissa, WWF Orissa and CEE – Eastern Regional Cell, Orissa observed “Elephant Day” and the Wildlife Week on 4th October 2008 in a grand manner in the presence of. More than 5,000 visitors and school children participated in the event. The following activities were the part of the celebration.

School children were specially targeted for this special awareness campaign and the entry to the Nandankanan Biological Park was made free for these budding conservationists. The basic objective was to make people conscious about the status of elephant in our state, their conservation need, their role in the ecosystem and what each one of us can do to save this majestic animal. A special education kit in Oriya and English was developed addressing the above issues.



A big hoarding depicting “Elephant Day” was fixed at the entrance at a prominent place. The elephants were decorated with the specially designed appliqué apparel from Pipili. It was an unique sight when the proud mahouts paraded the gorgeously decorated elephants. The crowd and the School children were cheering. The elephants received a special treat of coconut, banana and a host of their hot favorites. The mahouts were also felicitated by the PCCF (WL) and Chief Wildlife Warden Orissa. The prime attraction of the ceremony was the three months old orphaned elephant calf. The school children were found quite busy to name for him. The little master finally got his name as Anant by the school children.



### Celebration of Wild Life Week

Wildlife Week 2008 was celebrated in a grand manner in the Zoo. Throughout the week the entry to the park was made free for all the school children. The concluding function was on 7th October. The Principal Chief Conservator Wildlife and the chief wildlife warden was the chief guest. A host of activities were carried out on this occasion. The ambience of the entire zoo was set to a different tone. A number of education activities were carried out at various corner of the zoo.

54<sup>th</sup> Wildlife Week celebration was organized in the Zoo from 02.10.2008 to 08.10.2008. Banners were fixed near entry gate. School children availed free entry to the park. Number of awareness programmes was conducted to make



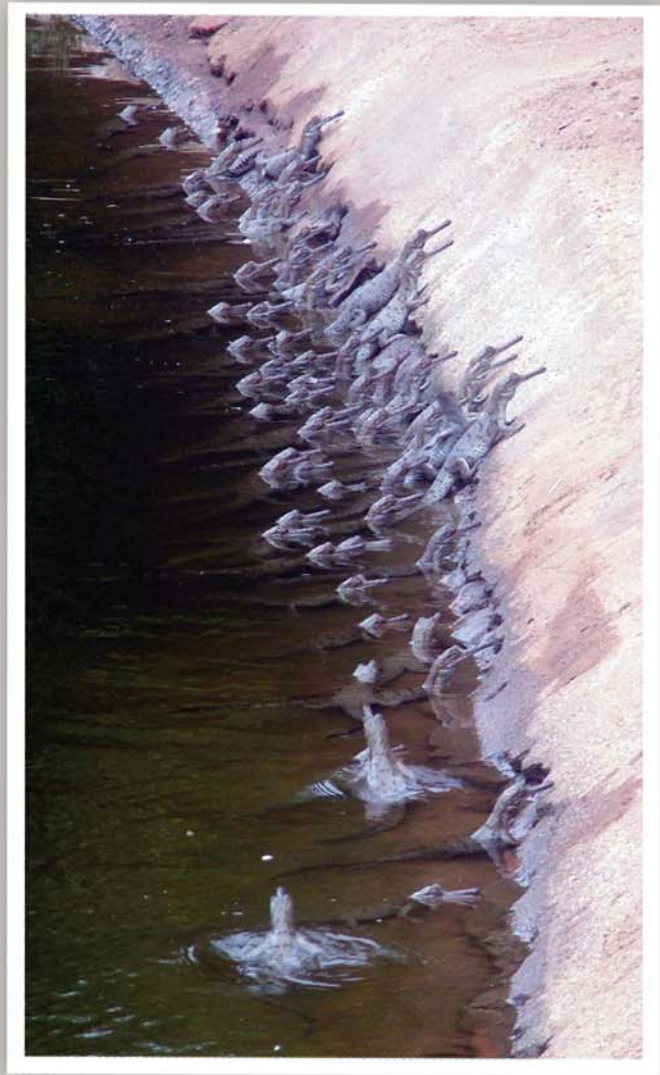
their visit memorable. State level wildlife quiz, essay and drawing competitions were organized at Nandankanan.

#### **Celebration of Foundation day**

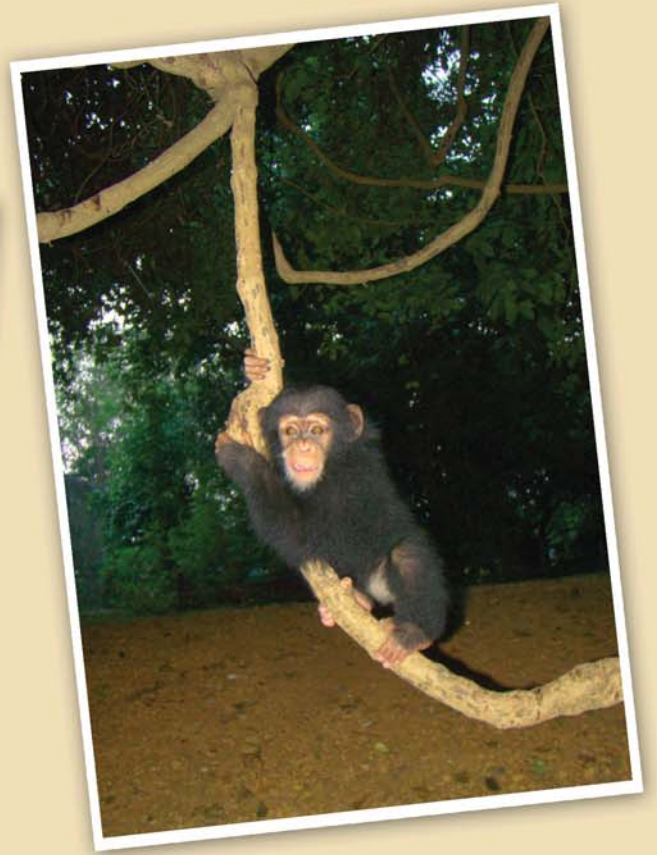
49th Foundation Day was celebrated with great pomp on 29.12.2008 in the zoo premises. "Panchatantra" the newsletter of Nandankanan Zoo School was released and distributed among school children and guests. The zoo personnel were felicitated for their commendable services rendered by them in various fields.

#### **Celebration of World Wetland Day**

World Wetlands Day was celebrated on 2<sup>nd</sup> February, 2009 in Nandankanan Zoological Park. samiana and stage was set up in front of Orchidarium along the Kanjia lake. About 100 students from various schools were present on the occasion. The programme started at 11 am and closed at 5.30 pm. The delegates from Japan were present on the occasion. The project co-ordinator of CEE, Bhubaneswar was also present. Debate and Drawing competition was organized among the students. Dr. S. Kaul, Director, Environment, MoEF graced the occasion. Sri B.K. Pattnaik, P.C.C.F. (WL) & CWLW, Sri Bhagirathi Behera, Director, Environment, Orissa was present. The winner of debate and drawing competition were given away the prizes. One booklet on Kanjia lake and one brochure on Wetlands were released to mark the occasion of world wetland day celebration. Three educational signages on Kanjia lake wetland were fixed along the wetland educational trail along the Kanjia lake signifying the importance of Kanjia lake ecosystem. Wetland flags were fixed along the Kanjia lake for the occasion. The dignitaries deliberated regarding importance of conservation of vanishing wetlands of the state and the measures to be taken to protect those wetlands. Finally the students were taken around Kanjia lake and enjoyed the boating. The Japanese delegates also gave a power point presentation in conference hall on creation and establishment of Japanese gardens in botanical garden side.









## Activities of Anti-depredation Unit

The anti-depredation unit has established at Nandankanan on 24th April 2006 with following objectives;

### Objectives

1. To save human life & property from attacking wild animals through physical & chemical restraint
2. Specialized team to address the issues with minimum response time

3. To treat sick animals in *in-situ* conditions
4. Rescue the injured and abandoned animals
5. Control of problematic animals
6. To carry out animal translocation, relocation and eco-tourism program

Dr. R.K. Samantaray, VAS, Nandankanan was entrusted to lead the unit comprising of skilled and experienced staff from Nandankanan Zoological Park.

| Name of animal & location / division | Location                   | Date of Tranquilization | Purpose of Tranquilization   | Remarks   |
|--------------------------------------|----------------------------|-------------------------|--|---|
| Wild elephant (female)               | Megha Dhenkanal            | 03.04.2009              | For treatment against painful septic cellulites of left fore leg           | Diet on next day due to septicaemia             |
| Striped Hyena (Male)                 | Jagatpur, Cuttack          | 25.04.2009              | For treatment at Nandankanan being severely injured by the local villagers | Recovered from injuries and retained in the zoo |
| Flying Squirrel (Male)               | Shimilipal, Mayurbhanj     | 25.04.2009              | For treatment & correction of fracture on right leg                        | Recovered and retained in the zoo               |
| Sloth Bear (Female)                  | Jabara, Jajpur             | 27.07.2009              | Capturing irritated sloth bear from attacking & injuring villagers         | Released to nature                              |
| Hanuman Langur (Male)                | Singiri, Balipatna, Hhurda | 09.08.2009              | Captured to control monkey menace  | Released to nature                              |
| Rhesus Monkey (Male)                 | CDA, Cuttack               | 16.08.2009              | Captured to control monkey menace  | Released to nature                              |
| Hanuman Langur (Male)                | Bahugrama, Cuttack         | 13.10.2009              | Captured to control monkey menace  |   |







## 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 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 flora and fauna, education, captive management of wildlife and eco-tourism and facilitating linkage between ex-situ and in-situ management of flora and fauna.
- (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 programmes, development of eco-tourism amenities of Nandankanan.
- (d) To receive and manage all contributions given to the Society in large interest of Nandankanan Biological Park for maintenance and upkeep of zoo animals, improvement of the Botanical garden with the objectives of conservation and education of flora and fauna. To improve and develop the infrastructures to achieve the above objectives.
- (e) To engage/employ such staff/personnel 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 are incidental or conducive to attainment of the objectives of all 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

- 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 1<sup>st</sup> 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 Centres 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 Orissa.
- 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 a member of World Association of Zoos & Aquariums (WAZA).