

NORTH BENGAL WILD ANIMALS PARK

# BENGAL SAFARI

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**Annual Report for the year**

**2018-19**



**North Bengal Wild Animals Park**  
**WEST BENGAL ZOO AUTHORITY**

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## **1. Report of the Officer-in-charge**

North Bengal Wild Animals Park, or as it is popularly known as Bengal Safari is situated in the foothills of the Himalayas in northern West Bengal. Cradled among Sal dominated forest and occupying an area of 297 hectares, the Park showcases endangered species endemic to the region as well as exotic species of animals.

In this annual the park undertook 23 animal exchange programmes and observed a visitor footfall of 291,999. The park witnessed the birth of Bengal tiger in this annual and had some major inaugurations such as the Leopard Safari, Nature Interpretation Centre and Break Point Watch Tower.

The park organised events commemorating days related to environment issues of national and international importance. Capacity building of the staffs was one of the major activities that the park got involved into, such as the Training (refreshment course) on Chemical Restraint of Wild Animals of park staff. 2 mahouts were sent to Assam for capacity building; similarly the Assistant Director of the park, Sri Asim Kr. Chaki was trained by the Central Zoo Authority in the Middle Officials Training Programme at New Delhi.

## **2. History of the Zoo**

West Bengal is a rich State in wild life. It has 5 national parks and 15 wild life sanctuaries. This state exhibits varieties of forest types. It has tropical – semi ever green to mangrove scrub, moist bamboo brakes to Terai and Sal forest. Varied habitats provide home and shelter to wild animal like elephant, tiger, leopard, sloth bear, gaur, sambar, barking deer, small cats, crocodile, gharial, jungle fowl and a number of terrestrial birds. Siliguri is situated in North Bengal and is gate way to North East India. This place is famous for wild life and varied habitat.

Bengal safari is situated 8 km from Siliguri and at present have tiger safari, mixed herbivore safari, Asiatic black bear safari, zoo and newly inaugurated Nature Interpretation Centre (which includes biodiversity room, ethnic display room, library etc.) as well as break point watch tower. In the mixed herbivore safari one will enjoy different species of deer, wild boar and various different birds. In the tiger safari, one will be fortunate to see the Royal Bengal Tiger.

One may opt for the combo 1 safari, which includes the tiger as well as the herbivore safari or the combo 2 safari, which includes the tiger, herbivore as well as the black bear safari or only the tiger safari. Bengal Safari also provides Elephant rides for visitors. The visitors can also visit the zoo which includes aviary i.e., various types of bird species, cats, gharials and crocodiles on foot. They can also visit newly inaugurated Nature Interpretation centre (NIC) where one can see the collection of different flora and fauna of North Bengal Wild Animals Park, ethnic display room, NIC- audio & visual room. During the safari, visitors can enjoy a scenic beauty of hills and plains from the break point watch tower cum cafeteria. All the animal enclosures have been divided into 7 beats for proper management. The whole safari has been divided into 8 sections viz., animal, veterinary, sanitation & horticulture, security, commissary (store), construction & maintenance, education cum-research, and administration. Each section will be

headed by a well qualified and professional incumbent who is in tune with the recommendation of expert committee on zoos.

A well equipped veterinary hospital with diagnosing and testing facilities, supported by adequate technical man power has been made. The veterinarian takes a daily round of the safari to observe the health, feeding and general hygienic condition of the animals.

The education cum-research wing enhances the knowledge and creates awareness among visitors through signage, published material, lectures and guided tours. It also conducts studies on behaviour, growth and nutrition requirement of animals.

Efforts have been made to provide adequate facilities like cafeteria / kiosk, parking, toilets, shelters and drinking water points for the visitors for their smooth and rewarding visit.

In order to meet unforeseen incidents, a detailed disaster management plan and contingency plan have been incorporated. A plan to upgrade the skill of animal keepers and other staff, a capacity building plan has also been prepared. The park is maintaining daily stock upkeep through e-governance. It will help to maintain the record and data of animals and related issues for easy interaction with national and international experts and institutes.

The North Bengal Wild Animals Park, Siliguri will be one of the role model in terms of facilities, infrastructures and management practices. It showcases the rich biodiversity of North Bengal.

### **3. Vision**

The North Bengal Wild Animals Park, Siliguri, West Bengal is to provide a glimpse of wild animals and birds of the North Bengal plains to the general public for developing a healthy relationship between animals and human beings and to promote conservation of our invaluable faunal resources through display, care and awareness. The safari is an endeavour to breed the endangered species for display, exchange and rehabilitation in the wild.

### **4. Mission**

This Wild Animals Park, Siliguri intends to complement the national efforts in conservation of wildlife through breeding of endangered species of the region and to develop empathy among visitors for wild animals.

### **5. Objective**

A professionally run Park will serve a great variety of roles to benefit both the animals it displays and the visiting public. Breeding programmes can help propagate endangered species and continue gene pools for species whose habitats have been obliterated. Educational programmes can help foster the respect that wild animals deserve and familiarize the visitors with the important role these animals play in the ecosystem. Large scale habitat destruction has resulted in the extinction of many species. The park may have to serve as the last bastion for threatened and endangered species.

The park shall work for the conservation of the rich bio-diversity of the region to the following objectives:

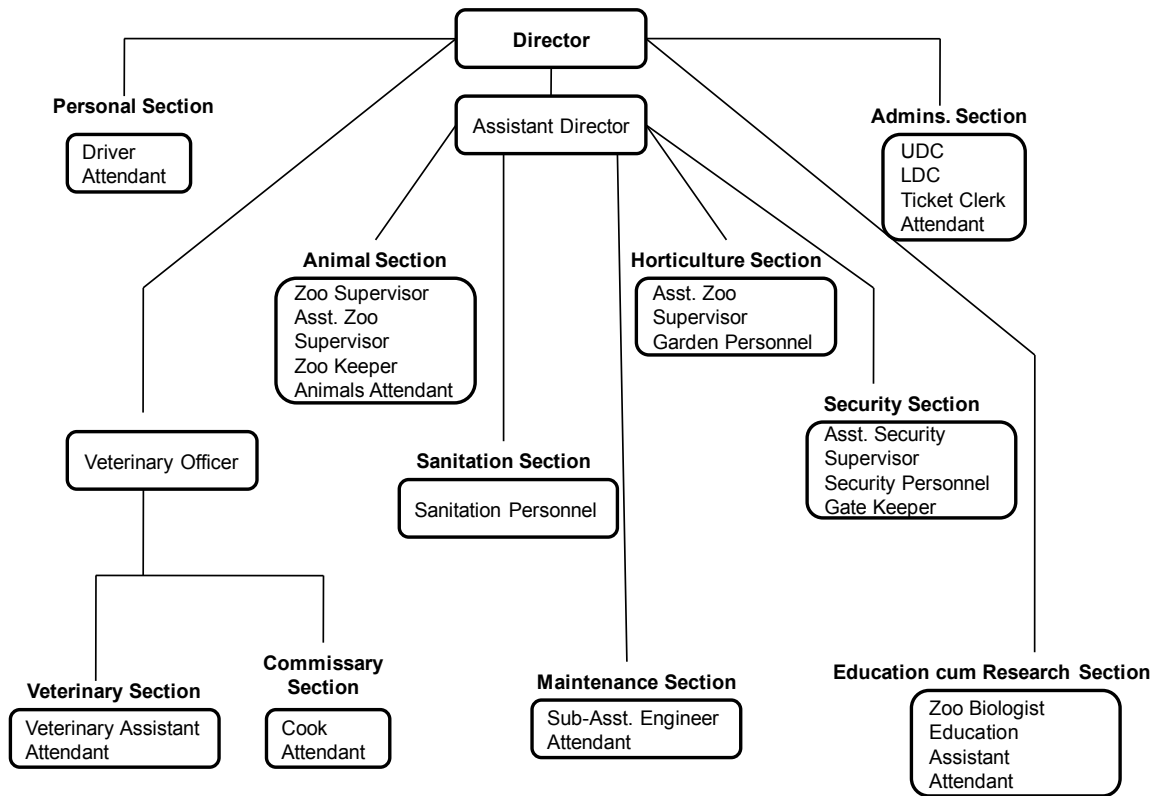
- The objective of the park shall be the conservation of the rich biodiversity of the region i.e. North Bengal, as the animal species displayed shall be from the North Bengal eco-system only.
- To reduce the tourist pressure on the National Parks/Protected Areas.
- To create amongst the visitors empathy towards wild animals through appreciation and better understanding.
- To collect and collate the scientific data on the biology, behaviour and health care of various species of wild animals displayed in the safari and use the same in future management of the safari park.
- Recreation for the purpose of providing wholesome, healthy and educational activity to a large number of people by utilizing the outdoor natural setting without detriment to any of the preceding objectives.

## 6. About us

Sl. No.	Particulars	Information
<b>Basic Information about the Zoo</b>		
1	Name of the Zoo	North Bengal Wild Animals Park
2	Year of Establishment	2015
3	Address of the Zoo	North Bengal Wild Animals Park, 5 <sup>th</sup> Mile, Sevoke Road, Salugara, Siliguri-734008
4	State	West Bengal
5	Telephone Number	+91 7047312620
6	Fax Number	-
7	E-mail address	<a href="mailto:dirnbwap@gmail.com">dirnbwap@gmail.com</a>
8	Website	<a href="http://www.northbengalwildanimalspark.in">www.northbengalwildanimalspark.in</a>
9	Distance from nearest	Airport: Bagdogra
		Railway Station: New Jalpaiguri
		Bus Stand: Siliguri
10	Recognition Valid upto (Date)	27.09.2019
11	Category of zoo	Mini
12	Area (in Hectares)	297
13	Number of Visitors (Financial Year)	2,91,999
14	Visitors' Facilities Available in Zoo	<ul style="list-style-type: none"> <li>• Cloak Room</li> <li>• Wheel Chair</li> <li>• Normal &amp; Chilled certified drinking water</li> <li>• Washroom</li> <li>• Cafeteria &amp; Canteen</li> <li>• Children playing area</li> </ul>

Sl. No.	Particulars	Information
		<ul style="list-style-type: none"> <li>• Sitting arrangement</li> <li>• First aid</li> <li>• Leaflets &amp; bag</li> <li>• Souvenir Shop</li> <li>• Golf Cart</li> </ul>
15	Weekly Closure Day of the Zoo	Monday
<b>Management Personnel of the zoo</b>		
16	Name with designation of the Officer in-charge	Mr. Dharmdeo Rai, IFS (Present) Mr. Rajendra Jakher, IFS (Former)
	Name of the Veterinary Officer	Dr. Nick Doley
	Name of the Curator	Mr. Asim Kr. Chaki, WBFS
	Name of the Biologist	Mr. Aditya Mitra
	Name of the Education Officer	Mr. Samir Thapa
	Name of the Compounder/ Lab Assistant	Mr. Biswajit Sarkar (Veterinary Assistant)
<b>Owner / Operator of the Zoo</b>		
17	Name of the Operator	Mr. V.K. Yadav
18	Address of the Operator	West Bengal Zoo Authority Aranya Bhawan, 7 <sup>th</sup> Floor, Block - LA-10A, Sector III Salt Lake City, Kolkata - 700106, West Bengal
19	Contact details/Phone number of Operator	+91 33 23355010
20	E-mail address of Operator	<a href="mailto:mwbza@gmail.com">mwbza@gmail.com</a> , <a href="mailto:wbzooauthority@yahoo.com">wbzooauthority@yahoo.com</a>

## 7. Organizational Chart



## 8. Human Resources

### Manpower of the Zoo

Sl.No	Designation	Number of Sanctioned Posts	Existing Staff Strength	Names of the incumbent
1.	Director	1	1	Mr. Dharmdeo Rai , IFS
2.	Asst. Director	1	1	Mr. Asim Kr. Chaki, WBFS
3.	Range Officer	1	1	Mr. Deepak Rasaily, FR
4.	Deputy Ranger/ Foresters	2	0	-
5.	Forest Guard	10	0	-
7.	Veterinary Officer	2	1	Dr. Nick Doley
8.	Asst. Engineer (Civil)	1	1	Mr.Tuhin Nag Biswas



9.	Zoo Biologist	1	1	Mr. Aditya Mitra
10.	Zoo Educator	-	-	-
11.	Sub Assistant Engineer (Civil)	1	1	Mr. Dipankar sarkar
12.	Sub Assistant Engineer (Elec.)	-	-	-
13.	Kitchen Supervisor (Dietician)	-	-	-
14.	Zoo Supervisor	1	0	-
15.	Garden Supervisor	-	-	-
16.	Sanitary Supervisor	-	-	-
17.	Research Assistant	1	0	-
18.	Education Assistant	1	1	Mr. Samir Thapa
19.	Library Assistant	-	-	-
20.	Taxidermist	-	-	-
21.	Laboratory Assistant	-	-	-
22.	Veterinary Assistant	1	1	Mr. Biswajeet Sarkar
23.	Asst. Zoo Supervisor	2	2	Mr. Tarun Mahalanabish (Retd RO) Mr. Jagannath Ganguly (Retd RO)
24.	Asst. Estate/ Security Supervisor	1	0	-
25.	Asst. Garden Supervisor	-	-	-
26.	Asst. Security Supervisor	1	1	Mr. Bir Bahadur Tamang
	Head Clerk	-	-	-
	Accountant	1	1	Ms. Swarnali Dutta Roy
	P.A.	-	-	-

	Store-keeper	1	0	-
	UDC /OA/TA	1	1	Mr. Pappu kr. Sah
	LDC	1	0	-
	Ticket Clerk	1	1	Ms. Manila Thapa
27.	Gate Keeper	1	0	-
	Zoo Keeper	10	1	Mr. Aditya Tamang (Deputed from PNHZZP)
	Mahut	-	-	-
	Cook	1	-	-
28.	Driver	11	5	Mr. Kusang Tamang Mr. Prakash Majhi Mr. Brishlal Saibo Mr. Manik Roy Mr. Utpal Debnath
38.	<b>Support Staff (On Contract ) :</b>			
	a) Security	30	22	1. Mr. Anil Saibo 2. Mr. Karan Marandi 3. Mr. Rakesh Majhi 4. Mr. Sudesh Barik 5. Mr. Krishna Thapa 6. Mr. Raj Thapa 7. Mr. Ashik Khawas 8. Mr. Manish Gajmer 9. Mr. Rajesh Lal Saibo 10. Mr. Kalyan Sharma 11. Mr. Chandra Kr. Chetri 12. Mr. Biswajit Karjee

				13. Mr. Ranjit Saibo
				14. Mr. Ajit Kr. Bhujel
				15. Mr. Bikram Malpahary
				16. Mr. Hemant Pradhan
				17. Mr. Aminur Rahman
				18. Mr. Himu Barman
				19. Mrs. Tripti Sarkar, Lady-Guard
				20. Ms. Shila Saibo, Lady-Guard
				21. Mrs. Dina Lama, Lady-Guard
				22. Mr. Biken Sunwar (Ex- Serviceman)
				1. Mr. Sanjib Hela
				2. Mr. Sukul Hela
				3. Mr. Suraj Paswan
				4. Mr. Manish Lal Saibo
	c) Garden Attendant	6		1. Mr. Indra Bdr Thapa
				2. Mr. Krishna Adhikary
				3. Mr. Dhanesh Roy
				4. Mr. Joyjit Barman
				5. Mr. Kalyan Barman
				6. Mr. Subal Pradhan
	d) Attendant	7	5	1. Mr. Asit Narjinary
				2. Mr. Raju Saibo

				3. Mr. Rinku Roy
				4. Mr. Binod Rai (Ex-Serviceman)
				5. Mr. Subas Thapa Chhetri
	e) Animal Attendant	15	8	1. Mr. Kumar Chhetri
				2. Mr. Unish Saibo
				3. Mr. Avinash Chhetri
				4. Mr. Hem Kr. Mahapatra
				5. Mr. Ajit Roy
				6. Mr. Gopal Biswakarma
				7. Mr. Subal Pradhan
				8. Mr. Rahin Saiboo

### 9. Capacity Building of zoo personnel

Sl.No.	Name and designation of the zoo personnel	Subject matter of Training	Period of Training	Name of the Institution where the Training attended
1	Dr. Nick Doley, V.O Aditya Mitra, Zoo Biologist Biswajeet Sarkar, V.A Binod Rai, Security Avinash Chhetri Raj Thapa Kalyan Barman Rakesh Karjee Hem Kr. Mahapatra Subhash Thapa Chhetri	Training (refresher course) on chemical restraint of wild animals	22.01.2019 & 23.01.2019	North Bengal Wild Animals Park (Bengal Safari), Salugara
2	Parimal Barman(Mahout) Jogesh Barman(Patawala)	Capacity Building of Mahout	28.01.2019 To 01.02.2019	Assam State Zoo cum Botanical Garden, Guwahati

3	Asim Kr. Chaki, WBFS, Asst. Director	“Middle Officials Training Programme” working in Indian Zoos	15.03.2019 & 16.03.2019	Central Zoo Authority, New Delhi
4	Biswajeet Sarkar, Veterinary Assistant	Book Keeping and Management Training	23.03.2019 To 25.03.2019	Padmaja Naidu Himalayan Zoological Park, Darjeeling
5	Joyjit Barman, Animal Attendant Kalyan Barman, Animal Attendant	Training on technique of capturing of Deer and other animals	28.03.2019 & 29.03.2019	Zoological Garden, Alipore



Training (refresher course) on chemical restraint of wild animals at North Bengal Wild Animals Park (Bengal Safari)



Capacity Building of Mahout at Assam State Zoo cum Botanical Garden, Guwahati



Middle Officials Training Programme, Central Zoo Authority, New Delhi

## 10. Zoo Advisory Committee –

### a. Date of Constitution

The Governing Body of the Authority (**Govt. Notification No. 10036-for/11M-27/2002, dt. 23.12.2009**) consists of following 14 members.

### b. Members

The Chief Secretary to the Govt. of West Bengal	Chairman
Addl. Chief/Principal Secretary to the Govt. of West Bengal, Dept. of Forests	Vice-Chairman
Secretary, West Bengal Zoo Authority	Member-Secretary
Secretary to the Govt. of West Bengal, Dept of Finance	Member
Principal Chief Conservator of Forests & HOFF, West Bengal	Member
Principal Chief Conservator of Forests (Wildlife) and Chief Wildlife Warden, West Bengal	Member
Member Secretary, Central Zoo Authority, New Delhi	Member
Director, Animal Husbandry & Vet. Services, W.B	Member
Director, Padmaja Naidu Himalayan Zoological Park, Darjeeling	Member
Director, Zoological Garden, Alipore, Kolkata	Member
Shri Debasish Paramanik, Raigunj Panchayet Samiti, Uttardinajpur	Member
Shri Sankar Dhar, People's for Animals, Alipurduar	Member
Sk. Johar Ali, President , All Backward Class Relief & Development Mission	Member
Smt. Debolina Biswas, Councilor, Kolkata Minicipal Corporation, Ward No. 74	Member

### c. Dates on which Meetings held during the year:

15<sup>th</sup> GB Meeting: 09-04-2018

## 11. Health Advisory Committee–

### a. Date of Constitution

A Veterinary Expert Team i.e., Health Advisory Committee is hereby reconstituted with the following Officers as per request of the Member Secretary, West Bengal Zoo Authority. A Committee constitutes comprising the following Officers of the Directorate of AH & VS, West Bengal.

## b. Members

Dr. Basudev Maity, Joint Director, ARD IAH&VB (R&T)	Chairman.
Dr. Joyjit Mitra, Specialist (Sero-Epidemiology, RDDDL (ER) , IAH&VB	Member
Dr, Debasish Chatterjee, Asst. Director, ARD (Vety), (Disease Investigation), IAH&VB.	Member
Dr. Proloy Mandal, Asst. Director, ARD (vety), IAH&VB	Member

## 12. Statement of income and expenditure of the Zoo

Sl. No.	Year (2018-19)	Source of fund	Expenditure in Rupees
			Plan
1.	As grant in aids	Deptt. Of Forest	<b>Yet to be received</b>
		Deptt. Of Tourism	
		NBDD	
2.	As grants under Non-plan	Zoo Authority of West Bengal	
	<b>Total Expenditure</b>		
3.	Gate Fee Collection:		<b>Receipt in Rupees</b>
		a) Zoo Ticket	<b>351,00,487</b>
		b) Animal Adoption	<b>1,00,000</b>
		c) Friends of Zoo	<b>5,000</b>
		d) Fee from rental store & souvenir shop	<b>2,97,600</b>
	<b>Total Revenue</b>		<b>35,503,087</b>

### 13. Daily feeding Schedule of animals

No.	Animals	No. of Individuals	Items	QUANTITY (Approx)	DRY WT (WET WEIGHT)	Time
1	Sambar	27	Grams Wheat Bran Crushed maize Masoor Dal Motor Dal Salt Black salt Turmeric Green fodder Salt lick with added vitamins, minerals	45KG 32KG 32KG 15KG 15KG 1KG 10G Yes Yes	141.10 KG	Early morning (8.45am-9.30am)
2	Spotted Deer	356				
3	Barking Deer	27				
4	Swamp Deer	06				
4	Hog Deer	04				
5	Wild Boar	07				
6	Indian Rhino	01	Corn Green fodder Carrot	90 Pcs 80 KG 2 KG	172KG	Morning (10am) Evening(4pm)
7	Bengal Tiger	SHEELA	Beef w/b	9KG	29.5KG	Evening (6pm)
		BIVAN	Beef w/b With Vitamin A, Calcium	10KG		
		KIKA RIKA	Cow milk	1.5KG		



			Beef w/b	4KG		
			Beef Soup w/b Chicken With Vitamin A, Calcium	2KG 3KG		
8	LEOPARD	SACHIN	Beef W/B	6KG	16.5KG	Evening (6pm)
		SOURAV	With Vitamin A, Calcium			
		SHITAL	Beef W/B	4KG		
		KAJAL				
		SIMBA	Chicken			
SISIR	With Vitamin A, Calcium	2KG				
		NAYAN	Beef W/B	0.90KG		
			Chicken	0.60KG		
9	Indian Palm Civet	03	Banana	3 Dozen	3 Dozen	Evening (5.30pm)
10	Jungle Cat	04	Chicken	4.7 KG	4.7KG	

11	Fishing Cat	02				
12	Birds & Pheasants	99	Grams Crushed Maize Masur Dal Wheat Carrot Cabbage Watermelon Chilly Guava Apple Musambi Onion Groundnut Banana Papaya SATU	1.5KG 1KG 30G 6KG 55G 3.31KG 2.83KG 33G 60G 65G 64G 39G 2.5kG 3 DOZEN 1.68KG 20G	26.48KG	Morning (7am-9am) & Afternoon (4pm-5pm)
13	Asiatic Black Bear	04	Atta Rice Grams Egg Milk Sattu Molasses Fruits Vegetables Watermelon Soup Beef W/B	1KG 1KG 1KG 8Pcs 2 LITRE 600G 1.2KG 1.84KG 3.46KG 4.32KG 4LITRE 4KG	28.42KG	Morning (7am-9am) Afternoon (4pm-5pm)

			Honey	AS REQUIRED		
14	Elephant	02	Rice Dal Mollasses (Winter) Salt Banana plants Turmeric Powder Green Fodder	8KG 2KG 1KG 100G 10PCS SMALL QUANTITY SUFFICIENT QUANTITY	11 KG+	Morning Afternoon (5pm-6pm) Night (fodder)
15	Lesser Adjutant Stork	02	Small Fish	4KG	4KG	Early Morning(7am- 9.30am)
16	Indian Pond Heron	01				
17	Gharial	06	Live fish	10KG	10KG	Early Morning (Thrice a week)
18	Turtles and Tortoise	54	Fish Chicken Carrot Cabbage	0.50KG 0.5KG 0.25KG 0.20KG	1.45KG	Mid-day (9-10am)
19	Crocodile	03	Fish	9KG	9KG	

#### 14. Vaccination Schedule of animals

Sl. No	Species	Disease vaccinated for	Name of the Vaccine and dosage/ quantity used	Periodicity
1	Tiger	Calcivirus, Rhino-tracheitis, Panleukopenia	Feligen 1ml	Annually
2	Tiger	Canine Distemper	Merial (CD) 1 ml	Annually
3	Tiger	Rabies	Raksharab 1ml	Annually
4	Leopard	Calcivirus,	Feligen 1ml	Annually

		Rhinotracheitis, Panleukopenia		
5	Leopard	Rabies	Raksharab 1ml	Annually
6	Asiatic Elephant	FMD, Haemorrhagic Scepticaemia, Black quarter	Triovac 3ml	Annually
7	Asiatic Elephant	Rabies	Raksharab 1 dose	Annually
8	Asiatic Elephant	tetanus	Tetanus toxoid 1dose	Annually
9	Asiatic Elephant	anthrax	Anthrax spore vaccine 1 dose	Annually
10	Jungle Cat	Calcivirus ,rhinotracheitis panleukopenia	Feligen 1dose	annually
11	Jungle Cat	Rabies	Raksharab 1 dose	annually
12	Fishing Cat	Calcivirus ,rhinotracheitis panleukopenia	Feligen 1 dose	annually
13	Fishing Cat	Rabies	Raksharab 1 dose	Annually
14	Asiatic Black Bear	Rabies	Rabigen 1 dose	Annually

**Note: Quantity is depends upon the body weight of the animal, species and drugs to be given.**

#### 15. De-worming Schedule of animals

Sl.No.	Species	Drug used	Month
1	Tiger	Fenbendazole, Oxfendazole, Ivermectin, Pyrental, Praziquantel, Febantel	6 months interval
2	Asiatic Black Bear	Fenbendazole, Albendazole, Oxfendazole	6 months interval
3	Barking Deer	Fenbendazole, Albendazole, Oxfendazole	6 months interval
4	Spotted Deer	Fenbendazole, Albendazole, Oxfendazole	6 months interval
5	Sambar	Fenbendazole, Albendazole, Oxfendazole	6 months interval
6	Hog Deer	Fenbendazole, Albendazole, Oxfendazole	6 months interval
7	Swamp Deer	Fenbendazole, Albendazole, Oxfendazole	6 months interval
8	Indian One Horned Rhinoceros	Fenbendazole, Albendazole	6 months interval
9	Exotic Birds	Fenbendazole, Albendazole, Oxfendazole, Piperazine, Pyrental embonate, Febantel	6 months interval
10	Palm Civet	Fenbendazole, Albendazole, Oxfendazole, Pyrental embonate, Febantel	6 months interval
11	Asiatic Elephant	Fenbendazole, Albendazole, Oxfendazole	6 months interval
12	Peafowl	Fenbendazole, Albendazole, Oxfendazole, Piperazine, Pyrental embonate, Febantel	6 months interval

13	Indigenous Birds	Fenbendazole, Albendazole, Oxfendazole, Piperazine, Pyrental embonate, Febantel	6 months interval
14	Jungle Cat	Fenbendazole, Oxfendazole, Ivermectin, Pyrental, Praziquantel, Febantel	6 months interval
15	Fishing Cat	Fenbendazole, Oxfendazole, Ivermectin, Pyrental, Praziquantel, Febantel	6 months interval

## 16. Disinfection Schedule

Sl.No.	Species	Type of enclosure	Disinfectant used and method	Frequency of disinfection
1	Tiger	Night Shelter	Kohrsolin, Potassium permanganate, burning, spraying, fumigation,	Twice a month
2	Leopard	Night Shelter	Kohrsolin, Potassium permanganate, burning, spraying, fumigation,	Twice a month
3	Asiatic Black Bear	Night Shelter	Kohrsolin, Potassium permanganate, burning, spraying, fumigation,	Twice a month
4	Barking Deer	Safari area	Kohrsolin, Potassium permanganate, burning, spraying, fumigation,	Twice a month
5	Spotted Deer	Safari area	Kohrsolin, Potassium permanganate,	Twice a month
6	Sambar	Safari area	Kohrsolin, Potassium permanganate, burning, spraying, fumigation,	Twice a month
7	Hog Deer	Safari area	Kohrsolin, Potassium permanganate, burning, spraying, fumigation,	Twice a month
8	Indian One Horned Rhinoceros	Safari area	Kohrsolin, Potassium permanganate,	Twice a month
9	Exotic Birds	Aviary	Kohrsolin, Potassium permanganate, spraying, fumigation,	Twice a month
10	Palm Civet	Night Shelter	Kohrsolin, Potassium permanganate, spraying, fumigation,	Twice a month
11	Asiatic Elephant	Night Shelter	Kohrsolin, Potassium permanganate,	Twice a month

			burning, spraying, fumigation,	
12	Peafowl	Aviary	Kohrsolin, Potassium permanganate, spraying, fumigation,	Twice a month
13	Indigenous Birds	Aviary	Kohrsolin, Potassium permanganate, spraying, fumigation,	Twice a month
14	Jungle Cat	Night Shelter	Kohrsolin, Potassium permanganate, burning, spraying, fumigation,	Twice a month
15	Fishing Cat	Night Shelter	Kohrsolin, Potassium permanganate, burning, spraying, fumigation,	Twice a month
16	-	Zoo Pathways, Entry gate foot dips, Goods carriage vehicle,	Kohrsolin, Potassium permanganate,	Daily

#### 17. Health Check-up of employees for zoonotic diseases

Sl.No.	Name	Designation	Date of Health Check up	Findings of Health Check up
1	Rakesh Karjee	Animal Attendant	22.08.2018	Nil for Zoonotic diseases
2	Hem Kumar Mahapatra	Animal Attendant	22.08.2018	Nil for Zoonotic diseases
3	Avinash Chettri	Animal Attendant	22.08.2018	Nil for Zoonotic diseases
4	Krishna Adhikari	Animal Attendant	22.08.2018	Nil for Zoonotic diseases
5	Aditya Tamang	Zoo Keeper	22.08.2018	Nil for Zoonotic diseases
6	Ranjit Thapa	Zoo Keeper	22.08.2018	Nil for Zoonotic diseases
7	Unish Lal Saibo	Animal Attendant	22.08.2018	Nil for Zoonotic diseases
8	Kumar Chettri	Animal Attendant	22.08.2018	Nil for Zoonotic diseases
9	Subol Pradhan	Animal Attendant	22.08.2018	Nil for Zoonotic diseases
10	Parimal Barman	Animal Attendant	22.08.2018	Nil for Zoonotic diseases
11	Jogesh Barman	Animal Attendant	22.08.2018	Nil for Zoonotic diseases
12	Kamal Barman	Animal Attendant	22.08.2018	Nil for Zoonotic

				diseases
13	Kalyan Barman	Animal Attendant	22.08.2018	Nil for Zoonotic diseases
14	Pintu Singh	Animal Attendant	22.08.2018	Nil for Zoonotic diseases
15	Manish Gazmer	Animal Attendant	22.08.2018	Nil for Zoonotic diseases
16	Bidhan Mahapatra	Animal Attendant	22.08.2018	Nil for Zoonotic diseases
17	Joyjit Barman	Animal Attendant	22.08.2018	Nil for Zoonotic diseases
18	Rafiqul Islam	Animal Attendant	22.08.2018	Nil for Zoonotic diseases
19	Dhanesh Roy	Animal Attendant	22.08.2018	Nil for Zoonotic diseases

**18. Development Works carried out in the zoo during the year:**

**AVIARY ENCLOSURE**



Fig: AV-8, Griffon Vulture Enclosure

**LESSER CAT ENCLOSURE**



Fig: LC-6 Clouded Leopard Enclosure



Fig: LC-7 Leopard Cat Enclosure

### BLACK BEAR ENCLOSURE



Black Bear Special Cage

### TIGER ENCLOSURE



Tiger Special Cage

### BUILDINGS

Break Point Watch Tower: 1nos

### ROAD

R.B.M. Road: 3500m



## VISITOR AMENITIES



- a) 6 Seater Golf Cart/ Sightseeing: 1 nos
- b) 8 Seater Golf Cart/ Sightseeing: 1 nos

## OTHERS

Up gradation of Boulder Sausage Boundary Wall Near village portion increasing the height of 1m for length of 1 km.

Guard room near every enclosure gate

## 19. Education and Awareness programmes during the year

<b>NATURE EDUCATION AND AWARENESS PROGRAMMES</b>			
<b>Sl. No.</b>	<b>Date</b>	<b>Occasion</b>	<b>Event</b>
1.	03.03.2019	World Wildlife Day Celebration	T-shirt painting cum awareness programme.
2.	26.01.2019	Republic Day Celebration	Flag hoisting Event
3.	14.12.2018	National Energy Conservation Day	Inter college powerpoint competition
4.	15.08.2018	Independence Day	Flag hoisting among park staff and visitors as well as plantation.
5.	12.08.2018	World Elephant Day	Celebration among two elephants and mahout as well as sit & draw competition and composition writing on elephants.
6.	29.07.2018	International Tiger Day	Quiz competition cum awareness programme along with distribution of tiger mask to the visitors.
7.	28.07.2018	Nature Walk Programme	Discussion on collection procedure of sample specimens without hampering nature as well as collection of herbarium specimens for their study.

8.	26.07.2018	Save Tiger Drive	Awareness campaign on wildlife threats and walk with visitors.
9.	24.07.2018	Van Mahotsav	Inter school debate competition
10.	05.06.2018	World Environment Day Celebration in association with the state pollution control board	Distribution of badges and caps with anti plastic slogans.
11.	22.05.2018	World Biodiversity Day Celebration	“As you wish” art workshop and shown a wildlife documentary with awareness regarding wildlife threats and conservation
12.	12.05.2018 & 13.05.2018	Yoga Workshop	Free yoga workshop

#### SCHOOL AND INSTITUTION VISITS DURING THE YEAR 2018-19

Sl. No.	Date	Name Of Institution	No Of Teachers	No Of Students
1.	19/03/2019	Students under HRDD (South), Govt. Of Sikkim	03	82
2.	16/03/2019	Euro Kids Pre-School	06	18
3.	22/02/2019	Atharakhai Balika Vidyalaya (H.S)	04	120
4.	21/02/2019	Daroga Basti Jr. High School	02	60
5.	15/02/2019	Shyamdharmjote High School (H.S)	04	115
6.	14/02/2019	Isabella School, Siliguri	03	40
7.	08/02/2019	Nand Prasad High School (H.S)	03	100
8.	02/02/2019	Bibhuti Bhushan B.Ed. College, Khedapara, Bongaon	02	140
9.	10/01/2019	Little Flowers' English Higher Secondary School, Birtamode, Nepal	06	120
10.	10/01/2019	Sonaula Primary School, Jalpaiguri	60	14
11.	27/12/2018	Students under HRDD, Govt. Of Sikkim, Gangtok	07	86

<b>12.</b>	18/12/2018	20 Govt. School under NANDOX Bal, Govt. Of Sikkim	03	51
<b>13.</b>	13/12/2018	Bright Life Academy	09	41
<b>14.</b>	08/12/2018	St.Joseph's School (Todey Jaldhaka)	06	12
<b>15.</b>	08/12/2018	Himalayan Nursery School, Lebong	05	16
<b>16.</b>	08/12/2018	UMS Karwamari SonaChandi	03	39
<b>17.</b>	24/11/2018	R.K.H.S School, Kurseong	10	34
<b>18.</b>	24/11/2018	Maulana Azad International School	08	150
<b>19.</b>	24/11/2018	St. Michael's School, Siliguri	03	26
<b>20.</b>	18/11/2018	Govt. Sec. School, Rhenok, E. Sikkim	05	29
<b>21.</b>	03/11/2018	Vidya Jyoti Academy, Bijanbari, Darjeeling	09	45
<b>22.</b>	02/11/2018	Dolphin Institute of Education, Mungpoo, Darjeeling	05	15
<b>23.</b>	27/10/2018	Mahbert High School, Dagapur	16	150
<b>24.</b>	27/10/2018	Turung Sec. School, South Sikkim	06	36
<b>25.</b>	16/10/2018	Phulmoti Memorial Universal Smart Academy	05	36
<b>26.</b>	25/10/2018	Kalimpong College, Kalimpong	02	20
<b>27.</b>	11/10/2018	North Point Residential School, Ranidanga	12	195

<b>28.</b>	10/10/2018	Nadipar H.C. High School, Balurghat	04	40
<b>29.</b>	10/10/2018	G.Z.P.S (Green Zone Public school)	10	60
<b>30.</b>	10/10/2018	A.P.C.Roy Govt. College, Dept. Of zoology	03	29
<b>31.</b>	09/10/2018	Child Welfare Home Primary School	02	24
<b>32.</b>	07/10/2018	Vivekananda Shishu Mandir, Malda	07	33
<b>33.</b>	06/10/2018	St. Philomena School, Kalimpong	04	28
<b>34.</b>	29.09.2018	Siliguri Model High School (Sr.)	11	101
<b>35.</b>	29.09.2018	Margaret (S.N.) English School	2	26
<b>36.</b>	25.09.2018	Suba Bai School	12	37
<b>37.</b>	12.09.2018	Madrasa Rizvia Gosulwara	4	35
<b>38.</b>	08.09.2018	Kamala Kanta High School	5	25
<b>39.</b>	02.09.2018	Govt. Girls High School	14	48
<b>40.</b>	10.08.2018	IIAS School of Management	3	46
<b>41.</b>	27.07.2018	Un Known	4	48
<b>42.</b>	25.07.2018	Rohini MSK	4	19
<b>43.</b>	21.07.2018	Siliguri Netaji High School (H.S.)	14	63
<b>44.</b>	20.07.2018	Sri Sri Academy	3	18
<b>45.</b>	18.07.2018	Disha	1	155
<b>46.</b>	02.06.2018	Hello Kids, Pramartis	07	63
<b>47.</b>	22.05.2018	Sri Sri Academy School, Dagapur	05	24
<b>48.</b>	16.05.2018	Sri Sri Academy School, Dagapur	05	41
<b>49.</b>	10.05.2018	APS Sukna	05	163
<b>50.</b>	10.05.2018	Air Force School, Bagdogra	05	61
<b>51.</b>	09.05.2018	Air Force School, Bagdogra	08	40
<b>52.</b>	04.05.2018	Air Force School, Bagdogra	06	120

53.	03.05.2018	Air Force School, Bagdogra	03	94
54.	02.05.2018	Air Force School, Bagdogra	06	89
55.	20.04.2018	New Morning Glory English School	07	41
56.	08.04.2018	SSA, HRDD, Govt. Of Sikkim	03	56
57.	06.04.2018	SSA, HRDD, Govt. Of Sikkim	03	71
58.	04.04.2018	Atharakhya Balika Vidyalaya	10	100
59.	03.04.2018	Sikkim's Students	4	61

## 20. Important Events and happenings

### Inauguration of NIC Building & Watch Tower Break Point

On 5<sup>th</sup> March, 2019 with the inauguration of newly built Nature interpretation Centre (NIC Building) and Break Point (Watch tower cum Cafeteria near the exit gate of Bear Safari), Bengal Safari added two new feathers dedicating to the visitors. The inauguration day was attended by various forest officials, dignitaries as well as various media houses. The chief guests among the dignitaries were Shri Binay Krishna Barman, MIC, Forest Deptt. Govt. Of West Bengal, Shri Rabindranath Ghosh, MIC, North Bengal Development Deptt., Govt. Of West Bengal and Shri Gautam Deb, MIC, Tourism Deptt, Govt. Of West Bengal. They were welcomed by Shri Rajendra Jakhar, IFS, Director, NBWAP as well as Shri V.K. Yadav, IFS, Member Secretary, WBZA.





### **T-Shirt Painting cum Awareness Programme**

United Nations General Assembly (UNGA), has decided to celebrate 03<sup>rd</sup> March as World Wildlife Day, which was proposed by Thailand, to celebrate and raise awareness of the world's wild fauna and flora. It is also the day of the adoption of the convention on International Trade in endangered species of Wild Fauna and Flora (CITES) by UNGA.

North Bengal Wild Animals Park (Bengal Safari), celebrated "World Wildlife Day" on 03<sup>rd</sup> of March, 2019 in the gallery of the NIC Building. Bengal Safari organized awareness campaign as well as T-Shirt Painting workshop among the participating students. The event was actively participated by all the students as well as their parents painting a t-shirt with a meaningful message. The students were allowed to paint a T-Shirt according to the theme of the event with a time limit of 2 hours. The theme of the said event was "Life under water- for people and earth".

The first half of the programme started with distribution of the folder, notepad & pen along with t-shirts, fabric colours and paint brushes. It continued with introductory note as well the discussion on the main purpose of celebration of World Wildlife Day by Shri Samir Thapa, (Edu. Asst.)

Later, the second half of the programme continued with painting works for about two hours by the students which concluded with selection of the best six works. It was unanimously decided to reward students as participants, not as competitors. Hence, best six consolation prizes were arranged for the painting works that resembled as well as gave message according to the decided theme. The programme concluded with distribution of Tiffin, group photo session and thanks giving note.

The main purpose behind organising the awareness campaign was to make the young minds aware of the ongoing changes within the marine ecosystem, their effects, as well as about the conservation and management of the marine ecosystem.



### **Acquisition of two Himalayan Black Bears**

In accordance with the approval received from Central Zoo authority, New Delhi, a pair (1:1) of Common Leopard (*Panthera pardus*) was transferred from South Khairbari Rescue Centre, Alipurduar to Himalayan Zoological Park, Sikkim on 20<sup>th</sup> December, 2018 and a pair (1:1) of Himalayan Black Bear (*Ursus thibetanus*) was acquired by Bengal Safari from the Himalayan Zoological Park. The transportation team comprised of officials from NBWAP and PNHZP respectively.

### **National Energy Conservation Day Programme**

North Bengal Wild Animals Park (Bengal Safari), Siliguri, celebrated “National Energy Conservation Day” on 14<sup>th</sup> of December, 2018 in the Seminar Room of the Administrative Building. Bengal Safari organized Inter- College “PowerPoint Presentation” Competition with a theme of “Conserve Energy to Preserve Future” on the occasion of foresaid event. The chief guest of the event was Shri. Asim Kr. Chaki (W.B.F.S), Assistant Director, Bengal Safari. The event was judged by Shri. Biplab Das (Asst. Prof) Kurseong College, Shri. Subrata Paul, Member, PFA, Siliguri, and Shri Aditya Mitra (Zoo Biologist), NBWAP.

The competition included participation by five different colleges of Siliguri. Each college was represented by two students and one faculty member. The PowerPoint Presentation session was actively participated by all the participants, faculty members and the judges with beautifully orated and presented slides along with fiery scientific queries and healthy discussions among them. Out of five colleges, Siliguri College won the said event, while APC Roy Govt. College and Gyanjyoti College became the 2<sup>nd</sup> and 3<sup>rd</sup> respectively.

The main purpose behind organising the PowerPoint Presentation competition was to make the young minds aware of the need to conserve energy in order to preserve the ecosystem and sharing constructive ideas for a better future.



### **VISIT OF NEPAL AND INDIAN FOREST OFFICIALS**

On 12.12.2018, Indian as well as Nepal forest officials visited Bengal Safari. During their visit, the Director of NBWAP, Shri. Rajendra Jakher, IFS gave them a warm welcome along with an introductory speech. It was followed by a brief explanation on Bengal Safari and its administration, infrastructure as well as facilities and utilities provided for the animals as well as visitors by Shri. Aditya Mitra, Zoo Biologist.



### **Visit of Doordarshan Kendra**

On 02.12.2018 & 03.12.2018, a team comprising of Mr. Anup Sen (Programme Executive), Mr. Chandrakumar (Cameraman), Mr. Pradip Karmakar (Engineering Assistant) and Mrs. Sonali Chakraborty Ghosh (Production Assistant) from Doordarshan Kendra visited the Park.

On the first day, shooting comprised of shots of staff in the morning filing, the visitor walking areas of the Park, the playground, aviaries, lesser cats, gharial, crocodile enclosures, medicinal plant garden, bonsai garden and the veterinary hospital. The team also took interview of visitors, Veterinary Officer and Animal Attendant at the hospital. They even documented videos of the Tiger Safari, Leopard Safari and Black Bear Safari accompanied by the Zoo Biologist and Education Assistant. On the second day of their visit, they went for the herbivore area shoot with the feeding vehicle. Later that day they took interview of the Range Officer, Zoo Biologist and the Assistant Director.

### **Advisory Committee**

On 03.11.2018, the Advisory Committee of West Bengal Zoo Authority comprising of Dr. Basudev Maity (Joint Director, RDDDL), Dr. Pralay Mandal and Dr. Malay Maity had visited to inspect the husbandry, upkeep and managerial practices of the Park as well as the veterinary section. Their inputs and suggestions proved quite effective and the park has taken effort to follow them.

### **World Elephant Day**

The Park celebrated World Elephant Day on 12<sup>th</sup> August, 2018. 30 students, 4 teachers and 17 Media personnel participated in the programme. Senior Mahut Mr. Raghunath Roy honoured our two Elephants Lakshmi and Urmila with two separate Cakes and after that the cakes were distributed to the students, teachers, media personnel and visitors. Park arranged a special feed for two Elephants on this occasion. The programme started off with a sit & draw competition and composition writing on elephants followed by storytelling by Mahut Raghunath Roy. Other mahut, night patrolling team members, media personnel shared their concept to the students and visitors. A short documentary video on elephants had been shown in this programme. Elephant masks were distributed to the child visitors and they also participated in a quiz competition. At the end of the programme, prizes were distributed to the winners.



### **International Tiger Day and Closing ceremony**

The Park celebrated International Tiger Day with 30 students, 5 teachers and 12 media personnel on 29<sup>th</sup> July. Many visitors also participated in the programme and Tiger mask had been distributed among the child visitors. Child visitors also



participated in quiz competition. Winner's prizes of the debate competition also distributed to the students. Students visited Zoo and Medicinal Plants Garden with researchers.

### **Nature Walk**

On 28<sup>th</sup> July 15 Students and one Teacher of Siliguri College participated in the Nature Walk programme organised by Bengal Safari. Students also visited Zoo Areas and medicinal Plants Garden with the Researchers and Biologist of Bengal Safari. They collected herbarium specimens for their study materials and learnt about the collection procedure of sample specimens without hampering nature.



### **Save Tiger Drive**

Park celebrated Save Tiger Drive on 26<sup>th</sup> July with visitor's awareness about Wildlife Threats and Walk with visitors. The office personnel of Biology and Research section of Bengal Safari guided visitors and discussed with them how we can take care of captive animals with Safari visitors and what should be the visitor's behavior during the visit.

### **Debate Competition**

On 24<sup>th</sup> July, 2018, 30 students from various schools of Darjeeling District and Jalpaiguri District participated in the debate competition organised by Bengal Safari on the occasion of Van Mahotsava to International Tiger Day Weeks. 18 teachers and Visitors also participated in this programme. The programme starts with tree plantations. Invitee Judge of the Competition with participating students of every school were planted trees and then 15 students spoke for the motion of the topic "Wildlife Tourism can help in conservation of Wildlife" and other 15 delivered their own talk on against the motion. Sarthak Ojha got the 1<sup>st</sup> prize for the motion and against the motion Nandini Jain got 1<sup>st</sup> prize.



### **Activity throughout a week from Van Mahotsava to International Tiger Day**

The Park took effort to celebrate a week starting from Van Mahotsava to International Tiger Day with a flow of programmes. The programme started off with a Debate Competition followed by Save Tiger Drive, Nature Walk with Students, Prize distribution of Debate Competition and Medicinal Plant Garden Visit etc.

### **Fish Farming & Fish Release Programme at Bengal Safari Pond**

Fish farming at Bengal Safari pond was commenced on 18 July 2018 in the existing fish pond through preparation of fish pond, control of aquatic weeds, culture of fish food organisms, fish nutrition under the technical assistance of Miss Namrata Ghosh, Research Fellow. Basically composite fish culture is being practised here and various species of carp fry were released for harvesting.

### **Inauguration of Leopard Safari and Marsh Crocodile Enclosure**

On 1<sup>st</sup> July, 2018, the leopard safari and marsh crocodile enclosure was inaugurated by Shri Binay Krishna Barman, MIC, Forest Deptt. Govt. Of West Bengal,, Govt. Of West Bengal and Shri Gautam Deb, MIC, Tourism Deptt, Govt. Of West Bengal, in presence of Shri V.K. Yadav, IFS, Member Secretary, WBZA and other forest officials.



### **World Environment Day Celebration**

The park in association with The State Pollution Control Board, celebrated World Environment Day on 5<sup>th</sup> June, with special messages regarding the harmful effects of plastic wastes to visitors to the Park. Visitors were provided with badges and caps with reduce plastic waste and save nature slogans. Interested and eager visitors were provided with an opportunity to plant trees inside the Park premises. Fruit trees were distributed to interested visitors to take home. The Park also provided saplings to Toribari village for plantation on Environment Day.



### **Volunteer, Adoption and Friends of Zoo Programme**

The Park launched its first Volunteer, Adoption and Friends of Zoo scheme in June, 2018 and advertised it in its website. The first Volunteer to join the Park was Mr. Avilash Dev, from 01.06.2018 to 10.07.2018, is a BBA graduate and hails from Siliguri. He conducted visitor survey and photographed various aspects of the Park, which proved to be an asset for various educational materials.

Mr. Nitin Harish, of Siliguri, joined a park on 19.11.2018 through the friends of Zoo Programme for a period of 1 year.

A female leopard cub, Nayan, housed at the park has been adopted for the period of one year from 12.11.2018 to 11.11.2019.

### **World Biodiversity Day Celebration**

Bengal Safari celebrated World Biodiversity day on 22<sup>nd</sup> May, 2018 with students and teachers of Morning Glory School. The students participated in an as you wish art workshop and were shown a wildlife documentary with awareness regarding wildlife threats and conservation. The students were felicitated with certificates.



### **Birth of Tiger Cubs**

The female tigress Sheela who was acquired from Nandankanan Zoo gave birth to three cubs on 11<sup>th</sup> May, 2018. The first born cub is a white tiger since both Sheela and Snehasish, the father have recessive white genes. While Snehasish, also acquired from Nandankanan Zoo has been kept in a separate kraal, Sheela and her cubs are together and off display at the moment. Sheela has been observed to be taking good care of her cubs, inspite of being a first time mother. The cubs are still on their mother's milk and are quite healthy. While utmost care is being taken for Sheela's diet, the Park is providing boiled drinking water and pasteurised meat to avoid transmission of disease causing organisms.



### **Yoga Workshop**

The Park took a special drive to spread peace and health awareness to its fellow staff and visitors by organising a free yoga workshop from 11<sup>th</sup> May, 2018 to 4<sup>th</sup> June, 2018. The Director had invited Mr.



Malikhan Singh Yogi, a famous and proficient yoga instructor, who has taught yoga in various different schools, army camps and universities. He conducted daily workshops for staffs and weekend classes for interested visitors.

### **Animal Acquisition**

The Park acquired two male common leopards from South Khairbari Rescue Center and two female leopards from Rasikbeel Mini Zoo for its Leopard Safari. Both the males and the females are compatible with each other as they were housed together in their earlier facilities. One male and two female Marsh Crocodiles arrived from Alipore Zoological Garden for the newly constructed Crocodile enclosure. The Park already houses five gharials in its reptile section. The quarter ended with the acquisition of eight Swamp Deer from Jaldapara. The animals have been kept in quarantine at present and will be released inside the Herbivore Safari soon.



### **Internship Program**

Ms. Ruma Mandal (M.Sc in Zoology, Darjeeling Govt. College) had joined Bengal Safari in a six week internship program on 19.12.2019. She has conducted “An Ethological Study of the Leopard Cubs in Captivity” housed at the park. She has successfully submitted the report. Her study will throw light on the better upkeep and husbandry practices of the leopard cubs.

### **Status of the Project titled “Status Survey of Free Living Flora & Fauna”**

A status report of the project has been submitted to the West Bengal Zoo Authority recently. During the second year of the extension period of the project a total of 80 quadrates for vegetation structure of the Bengal Safari, 80 quadrates for natural fodder status of herbivores within Bengal safari and 40 quadrates for the status of epiphytes of Bengal Safari have been studied in the floral survey. During this period, 2 tree species, 1 climber species, 1 shrub species and 14 herb species have been identified in addition to the already recorded 456 species of flora during the first phase of the study. During the second year of the extension period of the project transect quadrates have been studied within four zones of the park, viz., visitors area, riverine area, herbivore area and the biodiversity zone for insects, birds and arachnids. A total of 56 species of insects, 7 species of fishes, 20 species of aquatic benthic fauna and 13 species of birds have been identified during the second phase of the faunal study in addition to the already recorded 495 species of fauna during the first phase. The compilation of collected data and the draft report of the second phase of the study will be submitted by March, 2019.

## **21. Seasonal special arrangements for upkeep of animals**

- Covering of aviaries of birds to protect them from sun and rain
- Cooler, fans and blowers in night shelters of tiger and bear during summers and winters.
- Seasonal fruits in diets
- Seasonal enrichments

## **22. Research Work carried out and publications**

The total area of the Park is about 297 ha of which 151.72 ha shall come under the different Safaris. The area is largely plain with thick to sparse vegetation providing ideal habitat for the wildlife. The technical committee of West Bengal Zoo Authority had agreed on Phase II of the project “Status Survey of Free Living Flora and Fauna of North Bengal Wild Animals Park”, for one year. Research Scholars, Ms. Namrata Ghosh and Mr. Rajib Biswas working on the project had submitted the final report for phase II in March, 2019. The summary of the Phase II of the report has been provided below:

### **Summary of Project Report**

Bengal Safari is situated in the cradle of Mahananda Wild Life Sanctuary and on the Mahananda river valley up to the elevation of 167 m. This is mainly characterized by the broad-leaved deciduous forests. The fauna and flora of West Bengal possess the combined characteristics of the Himalayan and sub Himalayan tract. Biodiversity is shaped by the diverse habitats and vegetation designated with eight different forest types (Champion & Sheth 1968). These diverse ecosystems have resulted in rich faunal diversity of the state and consist of 10,013 species out of a total of 89,451 species of animals present in our country, thus representing 11.19% of our countries fauna. The floral diversity of the state is also enriched by 4,622 species out of a total of 44,594 floral species in India, and 10.36 % of our countries flora.

The study area of Bengal safari comprising 297 hectares was surveyed during the project duration period, i.e. year 2016 to 2017. Based on the few available literature regarding Baikunthapur Forest and Mahananda Wild Life Sanctuary, records, publications on the status of flora and fauna, it can be conferred that the study area is very rich with varied floral and faunal biodiversity. After thorough consultation with officials and staffs of Bengal Safari, forest department and local people efforts were made to recognize dense niches in deep forests in all parts of the Bengal Safari.

The 1<sup>st</sup> phase during 2016 to 2017 was mainly survey and documentation based and in the Phase-II (2017 to 2018) survey the diversity and richness of existing free living flora and fauna by quadrat sampling, transect study and scheduled observation, collection of samples, physicochemical parametric study, identification and laboratory techniques was assessed and studied along with listing of additional species recorded. Major macro fauna and flora specimens samples and their photographic display has been exhibited in the Nature Interpretation Centre (NIC) of Bengal Safari as part of one of the objectives from this project survey which will surely be useful for further research and educational activities going round the year in Bengal Safari.

For the phytosociological understanding of the vegetation, basic data was recorded through the application of quadrat sampling technique as suggested by Misra (1968), Shimwell (1971), Tripathi & Misra (1971), Phillip (1959), Das & Lahiri (1997), Kadir (2001), Rai (2006), Ghosh (2006) and Sarkar (2014). Also for fodder plants status assessment, assays by different 40 randomly distributed Nested Quadrates of 10m x 10m has been taken in Herbivores area in three seasons for the phytosociological understanding of epiphytic vegetation, tree trunk section study has been done by selecting old, large and full of epiphytes populated trees. In the Phase-II of the survey of free living flora and fauna, aquatic macrobenthic fauna and terrestrial fauna assemblage at Bengal Safari was assessed from 2017 to 2018. Physico-chemical parameters of water were estimated as per established protocols. For Faunal diversity, Sample collection in Bengal Safari was carried from the year 2017 to 2018. Different methodologies were followed during the survey, collection, identification and preservation of different categories of faunal specimens. In general, the specimens were collected using standard survey methods with the aid of field photographs and GPS location of sighted areas. Morphological features along with some unique characteristics of the collected specimens were noted in the field note book with collection date and numbers. Specimens, which were collected in the field, were temporarily preserved in airtight container, killing jars in the field and processing along with identification was done with the stereo compound microscope, available, accepted published books, journals, identification keys and monographs. For preservation, 10 % formaldehyde aqueous solution was used for vertebrate specimens, for invertebrates, 70 % alcohol was used. For insects, dry specimens were preserved in envelope containing naphthalene, pinned and some specimens were preserved in 70 % alcohol solution, nematodes were preserved in 5 % formaldehyde with a little drop of Glycerine. Diversity indexes were applied to detect the richness, diversity and evenness of taxa.

The present research work on whole areas of Bengal Safari deals with the record of 88 Angiospermic families, 1 Gymnospermic family, 14 Pteridophytic families, 3 Bryophytic families, 4 Algal families and 15 Fungi families. The Angiosperm families contain 391 species under 297 genera. 29 species of Pteridophytes were recorded belonging to 22 genera under 14 families. Macro Fungal diversity is also very interesting, total 28 Fungi species has been recorded under 22 genera of 15 families.

One of the prime aspects covered during this survey period was the diversity analysis of the existing floral and faunal species. The quadrat sample studied at a short period from the herbivores enclosures was presented the overall vegetation structure of the flora of Bengal Safari showed positive outcomes in terms of maximum relative frequency and high relative frequency along with maximum relative abundance of *Clausena excavata*, *Clerodendrum infortunatum* and *Shorea robusta* are showing maximum relative frequency. *Coffea bengalensis*, *Chromolaena odorata* and *Spermacoce alata* also showing high relative frequency. *Spermacoce alata*, *Clerodendrum infortunatum*, *Ageratum conyzoides*, *Chromolaena odorata* and *Coffea bengalensis*. *Clerodendrum infortunatum*

showing maximum value of Shannon Weiner diversity index within the herbivores vegetation. The vegetation study result shows the Menhinick Index (D) is 0.28 and Margalef Index (RI) is 40.90.

Study on vegetation aerial fodder cover has been calculated against vegetation cover. Total 63 species has found which has taken by the captive herbivores. The result shows that, the *Shorea robusta* covering 68.91 % vegetation whereas *Clerodendrum infortunatum* covering 9.2%, *Clausena excavata* 2.23%, *Chromolaena odorata* covering 1.97 % of total vegetation. Epiphytic status was also studied, it is found that maximum species distributed throughout the tree trunk from 2 meter high to about 25 meter high. Good epiphytic vegetation found on the Sal tree trunk. Up to 15 meter high good epiphytic vegetation found in *Litsea monopetala*, *Sterculia villosa*, *Lagerstroemia hirsute*, *Lagerstroemia perviflora* etc. *Bulbophyllum careyanum*, *Lepisorus lancifolius*, *Bulbophyllum bisetum*, *Aerides multiflorum* and *Drynaria propinqua* etc shows high values of Relative Frequency, Relative Abundance, Relative Dominance and also Important Value Index (IVI). *Bulbophyllum careyanum* shows maximum values of Shannon Weiner index in overall vegetation.

This one year research work from 2017-18 in Bengal Safari recorded a varied faunal diversity. A total of 154 species has been recorded under 144 genera covering 90 families. All of these are micro and macro fauna and natural inhabitant of this area. This short time research work represents 26 microscopic faunal species, 101 species of arthropods belonging to 54 families and 23 species of birds representing 18 families, Fishes covering 8 species under 6 families, , reptiles covering 7 species, Mammals covering 2 species. Presence or absence of littoral vegetation and depth found to be important factors and that is affecting in the distribution of aquatic insects in the present studied water bodies.

Physicochemical Properties of water in aquatic bodies constituting parameters such as dissolved oxygen, turbidity, alkalinity, pH, depth, temperature, electrical conductivity, water current were also studied during the survey period. Transect survey was carried out to study the diversity of butterflies and arachnids recorded. Among these species Nymphalids and Salticidae were found to be commonly occurring with frequency and relative frequency distribution. Amongst fishes, Family Cyprinidae representing the highest number of recorded species, followed by the major number of fishes was found from the order Cypriniformes. On the basis of habitat, 5 species are recorded from the forest habitat, 2 species from aquatic habitats and IUCN threatened category status is as one species have been reported in the Near Threatened category and remaining species were listed as Least Concern. 23 bird species belonging to 23 genera, 18 families and 15 orders were recorded which includes winter visitors. Among the aves, the order Passeriformes contributed the highest number of species followed by the order Psittaciformes, Coraciiformes and Cuculiformes with high frequency, abundance and diversity. The highest bird diversity recorded in the Herbivore area followed by aviary trails and water bodies of Singhijhora and Shyam jhora is an indication to rich diversity of

avian fauna within this area as this zone provides them suitable sites for nesting, feeding, perching and breeding. According to the WPA 1972, maximum birds' species fall under Schedule IV with two species falling in near threatened IUCN category. Mammalian diversity of Bengal Safari comprises of addition of 2 species with earlier reported 12 species belonging to 2 Genera and 2 orders being carnivore in food habit.

Although still in its infancy, the conservation of floral and faunal diversity is already making itself felt. The philosophy of sustainable development, the ecosystem approach, and the emphasis on building partnerships are all helping to shape efforts and action on saving biodiversity. The data and reports that governments are gathering and sharing with each other are providing a sound basis for understanding the challenges and collaborating on the solutions, one such effort is through this research project report on survey of free living floral and faunal diversity in Bengal Safari. Much, much more needs to be done.

The passage of the Earth's biodiversity through the coming century will be its most severe test. With human population expected to rise dramatically, particularly in countries like ours, India (developing countries), and the consumer revolution set for exponential expansion - not to mention the worsening stresses of climate change, ozone depletion, and hazardous chemicals - species and ecosystems will face ever more serious threats. Unless we take action now, children born today will live in an impoverished nation.

The compilation of this research offers a comprehensive, local strategy for preventing such climatic stresses. A richer future is possible. If governments (State & Central) and all sectors of society in India apply the concepts and efforts in conserving biodiversity through conservation of flora and fauna and make the conservation and sustainable use of biological diversity a real priority, we can ensure a new and sustainable relationship between humanity and the natural world for the generations to come.

### 23. Conservation Breeding Programme of the Zoo

The Park is not involved in any Conservation breeding programmes yet but breeding has occurred in tiger, herbivores as well as pheasants.

### 24. Animal acquisition / transfer / exchange during the year

#### ANIMALS ACQUIRED IN THE YEAR 2018-19

SI No	Date	Animals	Sex ratio			Acquired From
			M	F	U	
1.	21.12.2018	Himalayan Black Bear	1	1	0	Himalayan Zoological Park, Sikkim
2.	01.08.2018	Lady Amherst's Pheasant	1	1	0	Padmaja Naidu Himalayan Zoological Park
3.	23.07.2018	Leopard	2	0	0	Sukna Range
4.	29.06.2018	Swamp Deer	4	4	0	Jaldapara



5.	26.06.2018	Marsh Crocodile	1	2	0	Zoological Garden, Alipore
6.	23.06.2018	Leopard	0	1	0	Baikunthapur Division [Apalchand Range]
7.	21.06.2018	Common Leopard	0	2	0	Rasikbeel Mini zoo
8.	17.06.2018	Common Leopard	2	0	0	South Khairbari Rescue Centre

#### ANIMALS DISPOSED IN THE YEAR 2018-19

SI No.	Date	Animals	Sex ratio	Acquired From
1.	13.03.2019	Bengal Tiger	1:0:0	Zoological Garden, Alipore

#### 25. Rescue and Rehabilitation of wild animals carried out by the Zoo

As per the instruction of the Hon'ble Chief Minister, West Bengal and subsequent order by the PCCF & Chief Wildlife Warden of West Bengal to local DFOs a complete list has been provided with corresponding order/permission from the CWLW for your reference (**PCCF & CWLW letter No.: O.O.No.141/WL/2W-266/2018 dt: 07.06.2018**)

S. No.	Species	No. of Animal Acquired	No. of Animals Disposed	Reference	Acquired from & date	Disposed to & date
	Barn Owl	08	08	PCCF & CWLW letter No. 5439/WL/2W-16/2017 dt: 20.12.2017 Vide Challan: WB/7862	Baikunthapur 05.12.2018	Released in wild
	Black Kite	01	01	PCCF & CWLW letter No. 5439/WL/2W-16/2017 dt: 20.12.2017 Vide Challan: WB/7862	Baikunthapur 7862 05.12.2018	Released in wild
	Indian Pangolin	01	01	PCCF & CWLW letter No. 5439/WL/2W-16/2017 dt: 20.12.2017	Belakoba Range 13.10.2018	Released in wild
	Black Kite	01	01	PCCF & CWLW letter No. 5439/WL/2W-16/2017 dt: 20.12.2017 Vide Challan:	Baikunthapur 20.09.2018	Released in wild

				WB/7857		
	Water Monitor	02	02	388/S.O.23(C/GENL/A-EX(MICS))A-EX/PNHZP/18-19	Padmaja Naidu Himalayan Zoological Park, Darjeeling  01.08.2018	Released in wild
2	Chinese Pangolin	01	01	As per direction of CWLW, West Bengal Vide Challan: WB/6534	Belacoba Range, 20.06.2018	Released in wild
	spotted owlet	02	02	PCCF & CWLW letter No. 5439/WL/2W-16/2017 dt: 20.12.2017 Vide Challan: WB/29391	baikunthapur division 09.06.2018	released in wild

## 26. Annual Inventory of animals

### PART- A

Inventory Report for the Year: 2018-19

S.No.	SPECIES NAME	ANIMAL NAME	SCIENTIFIC NAME	OPENING STOCK	BIRTHS	ACQUISITIONS	DISPOSALS	DEATHS	CLOSING STOCK
				M   F   U   T	M   F   U	M   F   U	M   F   U	M   F   U	M   F   U   T
<b>Endangered Species (Schedule I and II )</b>									
1	Bird	Peafowl	<i>Pavo cristatus</i>	3   1   0   4	0   0   0	0   0   0	0   0   0	0   0   0	3   1   0   4
2	Bird	Peafowl White	<i>Pavo cristatus</i>	3   1   0   4	0   0   2	0   0   0	0   0   0	0   0   2	3   1   0   4
3	Bird	Hill Myna	<i>Gracula religiosa</i>	1   1   0   2	0   0   0	0   0   0	0   0   0	0   0   0	1   1   0   2
<b>Total Birds</b>				<b>7   3   0   10</b>	<b>0   0   2</b>	<b>0   0   0</b>	<b>0   0   0</b>	<b>0   0   2</b>	<b>7   3   0   10</b>
1	Mammal	Bear Himalayan Black	<i>Ursus thibetanus</i>	1   1   0   2	0   0   0	1   1   0	0   0   0	0   0   0	2   2   0   4
2	Mammal	Cat Fishing	<i>Prionailurus viverrinus</i>	1   1   0   2	0   0   0	0   0   0	0   0   0	0   0   0	1   1   0   2
3	Mammal	Cat Jungle	<i>Felis chaus</i>	3   0   0   3	0   0   0	1   0   0	0   0   0	0   0   0	4   0   0   4
4	Mammal	Civet Common Palm - Cat Toddy	<i>Paradoxurus hermaphroditus</i>	1   1   1   3	0   0   0	0   0   0	0   0   0	0   0   0	1   1   1   3
5	Mammal	Elephant	<i>Elephas maximus</i>	0   2   0   2	0   0   0	0   0   0	0   0   0	0   0   0	0   2   0   2

		Indian							
6	Mammal	Rhinoceros Indian One Horned	<i>Rhinoceros unicornis</i>	1   0   0   1	0   0   0	0   0   0	0   0   0	0   0   0	1   0   0   1
7	Mammal	Tiger Bengal	<i>Panthera tigris tigris</i>	2   1   0   3	0   0   3	0   0   0	1   0   0	0   0   1	1   3   0   4
8	Mammal	Deer Swamp	<i>Rucervus duvaucelli</i>	0   0   0   0	0   0   0	4   4   0	0   0   0	1   1   0	3   3   0   6
9	Mammal	Leopard Common	<i>Panthera pardus</i>	0   0   0   0	0   0   0	2   2   3	0   0   0	0   0   0	4   3   0   7
<b>Total Mammals</b>				<b>9   6   1   16</b>	<b>0   0   3</b>	<b>8   7   3</b>	<b>1   0   0</b>	<b>1   1   1</b>	<b>17   15   1   33</b>
1	Reptile	Crocodile Long Snouted (Gharial)	<i>Gavialis gangeticus</i>	2   3   3   8	0   0   0	0   0   0	0   0   0	0   0   2	2   3   1   6
2	Reptile	Crocodile Marsh	<i>Crocodylus palustris</i>	0   0   0   0	0   0   0	1   2   0	0   0   0	0   0   0	1   2   0   3
3	Reptile	Turtle Ganges Soft-shelled	<i>Nilssonia gangetica</i>	0   0   4   4	0   0   0	0   0   0	0   0   0	0   0   0	0   0   4   4
4	Reptile	Turtle Indian Black	<i>Melanochelys trijuga</i>	0   0   50   50	0   0   0	0   0   0	0   0   0	0   0   0	0   0   50   50
<b>Total Reptiles</b>				<b>2   3   57   62</b>	<b>0   0   0</b>	<b>1   2   0</b>	<b>0   0   0</b>	<b>0   0   2</b>	<b>3   5   55   63</b>
			<b>Total of Endangered Species</b>	<b>18   12   58   88</b>	<b>0   0   5</b>	<b>9   9   3</b>	<b>1   0   0</b>	<b>1   1   5</b>	<b>27   23   56   106</b>

## PART- B

## Inventory Report for the Year: 2018-19

S.No.	SPECIES NAME	ANIMAL NAME	SCIENTIFIC NAME	OPENING STOCK	BIRTHS	ACQUISITIONS	DISPOSALS	DEATHS	CLOSING STOCK
				M   F   U   T	M   F   U	M   F   U	M   F   U	M   F   U	M   F   U   T
<b>Other than Endangered Species</b>									
1	Bird	Fowl Jungle Red	<i>Gallus gallus</i>	5   4   0   9	0   0   0	0   0   0	0   0   0	0   0   0	5   4   0   9
2	Bird	Heron Pond	<i>Ardeola grayii</i>	0   0   1   1	0   0   0	0   0   0	0   0   0	0   0   0	0   0   1   1
3	Bird	Parakeet Rose Ring	<i>Psittacula krameri</i>	0   0   40   40	0   0   0	0   0   0	0   0   0	0   0   0	0   0   40   40
4	Bird	Stork Adjutant (lesser)	<i>Leptoptilos javanicus</i>	1   1   0   2	0   0   0	0   0   0	0   0   0	0   0   0	1   1   0   2
5	Bird	Cockatoo Medium Sulpher Crested	<i>Cacatua galerita eleonora</i>	0   0   7   7	0   0   0	0   0   0	0   0   0	0   0   0	0   0   7   7
6	Bird	Cockatoo Moluccan/Salmon-crested	<i>Cacatua moluccensis</i>	0   0   4   4	0   0   0	0   0   0	0   0   0	0   0   0	0   0   4   4
7	Bird	Cockatoo White	<i>Cacatua alba</i>	0   0   2   2	0   0   0	0   0   0	0   0   0	0   0   0	0   0   2   2
8	Bird	Macaw Blue & Yellow	<i>Ara ararauna</i>	0   0   5   5	0   0   0	0   0   0	0   0   0	0   0   0	0   0   5   5
9	Bird	Macaw Scarlet	<i>Ara macao</i>	0   0   1   1	0   0   0	0   0   0	0   0   0	0   0   0	0   0   1   1

10	Bird	Parakeet African Grey	<i>Psittacus erithacus</i>	0  0  12  12	0  0  0	0  0  0	0  0  0	0  0  0	0  0  12  12
11	Bird	Pheasant Golden	<i>Chrysolophus pictus</i>	2  2  0  4	0  0  2	0  0  0	0  0  0	0  0  1	2  2  1 5
12	Bird	Pheasant Silver	<i>Lophura nycthemera</i>	1  1  0  2	0  0  0	0  0  0	0  0  0	0  0  0	1  1  0  2
13	Bird	Pheasant Lady Amherst's	<i>Chrysolophus amherstiae</i>	0  0  0  0	0  0  0	1  1  0	0  0  0	0  0  0	1  1  0  2
<b>Total Birds</b>				<b>9  8  72  89</b>	<b>0  0  2</b>	<b>1  1  0</b>	<b>0  0  0</b>	<b>0  0  1</b>	<b>10  9  73  92</b>
1	Mammal	Deer Barking (Kakar)	<i>Muntiacus muntjak</i>	10  6  11  27	0  0  0	0  0  0	0  0  0	0  0  0	10  6  11  27
2	Mammal	Deer Hog	<i>Axis porcinus</i>	1  3  0  4	0  0  0	0  0  0	0  0  0	0  0  0	1  3  0  4
3	Mammal	Deer Sambar	<i>Rusa unicolor</i>	9  13  5  27	0  0  1	0  0  0	0  0  0	0  0  0	9  13  6  28
4	Mammal	Deer Spotted (Chital)	<i>Axis axis</i>	115  177  61  353	0  0  5	0  0  0	0  0  0	0  2  0	115  175  66  356
5	Mammal	Pig Wild - Wild Boar	<i>Sus scrofa</i>	0  2  5  7	0  0  0	0  0  0	0  0  0	0  0  0	0  2  5  7
<b>Total Mammals</b>				<b>136  201  82  418</b>	<b>0 0  6</b>	<b>0  0  0</b>	<b>0  0  0</b>	<b>0  2  0</b>	<b>135  199  88  422</b>
<b>Total of Other than Endangered Species</b>				<b>144  209  154  507</b>	<b>0  0  8</b>	<b>1  1  0</b>	<b>0  0  0</b>	<b>0  2  1</b>	<b>145  208  161  514</b>
<b>Grand Total</b>				<b>162  221  212  595</b>	<b>0  0  13</b>	<b>10  10  3</b>	<b>1  0  0</b>	<b>1  3  5</b>	<b>172  231  217  620</b>

## 27. Mortality of animals

S. No.	Animal Name	Scientific Name	Sex	Date of Death	Reason of Death
	Gharial	<i>Gavialis gangeticus</i>	U	22.03.2019	Cardio Respiratory Failure
1	Bengal Tiger	<i>Panthera tigris tigris</i>	F	30.10.2018	Death due to cardio Respiratory Failure (Pneumonia).
2	White Peafowl	<i>Pavo cristatus</i>	U	29.10.2018	Death due to Hemorrhagic Shock.
3	Gharial	<i>Gavialis gangeticus</i>	U	18.10.2018	Death due to Enteritis.
4	Pheasant Golden	<i>Chrysolophus pictus</i>	U	05.08.2018	Due to Haemorrhagic Shock
5	Peafowl White	<i>Pavo cristatus</i>	U	26.07.2018	Due to Haemorrhagic Shock
6	Deer Swamp	<i>Rucervus duvaucelli</i>	F	10.07.2018	Due to Dystokia
7	Deer Swamp	<i>Rucervus duvaucelli</i>	M	05.07.2018	Due to Capture Myopathy
8	Spotted Deer	<i>Axis axis</i>	F	27.05.2018	Due to Infighting
9	Spotted Deer	<i>Axis axis</i>	F	16.05.2018	Due to Encephalitis

## 28. Compliance with conditions stipulated by the Central Zoo Authority

### Observations of CZA and Action Taken Report F NO 22-64/2004-CZA (461)(VOL III)(AK)/1891/2017 DT 20/11/2017

Sl. No.	Norm No.	Condition	Time period to comply	Reply
<b>1.General Requirements</b>				
1	10.1 (4)	<p>a) It was observed that a portion of the perimeter fence fencing the Sevoke Road had tilted and could collapse. The same may be strengthened and its structural stability ensured.</p> <p>b) It was observed that the iron flats used as binders to chain-link have just been fixed through welding. This may give way due to weathering. It is advised that additionally the flats may be bind together by used of nut &amp; bolt, to provide strength to the fence.</p>	Immediately	<p>Repaired immediately</p> <p>Regular checking been made in fencing. However additional protection will be made where required</p>

2	10.1 (5)	The Zoo operator should construct 2 meters high masonry wall along the perimeter to allay all possible further threats to the zoo animals.	Two years	Work in progress
3	10.1 (7)	The Zoo should put in place appropriate mechanism to dispose off all solid wastes generated in the zoo.	Three months	Solid biodegradable waste made to vermi-compost. STP also working
<b>2.Administrative &amp; Staffing Pattern</b>				
4	10. 2(2)	The Zoo operator should appoint a full-time Curator and an Education officer as the zoo aspires to become a medium category zoo.	Three months	Recruitment of Education Assistant has been done. At present Asst. Director working as curator.
<b>3.Development and planning</b>				
5	10. 3(5)	a) A parking plaza having designated areas/sheds for two wheelers and four wheeler should be provided at the entrance. The plaza may also consist of a one toilet complex for (gents & ladies each), a baby care room for nursing mothers, a medical inspection room for first aid etc. and a cloak room for luggage. b) The bonsai pavilion currently located near the gate may also be shifted to the parking plaza. The above facilities should be provided with medium change in the landscape.	One Year	Parking area for car & two wheeler is present. Separate toilet, drinking water facility in parking area. Baby care room, Cloak Room also made Bonsai pavilion will be shifted in due course.
6	10. 3(6)	The Zoo operator should submit revised Animal Collection Plan for approval of the Central Zoo Authority as it is found to be vague in nature and has included all free ranging animals found in the geography. It should be revised having focus on conservation of endangered fauna of Riverine Grassland, River Mahananda and Tropical Forests of Eastern Himalayan foothills. Similar plan may be prepared for conservation of flora in the proposed Biodiversity Park.	Six months	Already submitted to WBZA. Vide letter 20/23 dt: 16/04/2018



7	10.3(7)	The Zoo should construct Isolation cum quarantine enclosure near the Veterinary hospital campus. All newly arriving animals shall be subjected to quarantine before admitting them in to the safari/display enclosure.	Four months	One Isolation enclosure made near vet hospital
<b>4. Animal housing, display of animals and animal enclosure</b>				
8	10.4(3)	(a)Currently the sliding gates opening into the safari are operated from outside the night shelter complex. This may become difficult to operate in inclement weather. The zoo authorities may explore providing drop down gates with gears, which are safe and can be operated from inside the night shelter. (b)Rain shelter should be provided for Safari gate operators.	With immediate effect	Safe handle of sliding gate been made.  Complied
9	10.4(6)	Thick wooden platforms should be provided inside the feeding and retiring cubicles of tiger. They should also be cleaned on daily basis and disinfected.	Immediately	Complied
<b>5. Upkeep and healthcare of animals</b>				
10	10.5(2)	Meat inspection and processing room is located within the zoo commissary complex. It is advised that the farthest room in the commissary which is closer to the veterinary hospital be converted into a meat inspection and processing room. Separate entrance should be provided to the room and its access from the store and kitchen should be closed. The room should be made fly-proof and provided with necessary granite table and deep freezer. All washouts from the room should be disposed off in a hygienic manner through soak pits.	Three months	Farthest room in the commissary is closer to the veterinary hospital & it is meat inspection and processing room. Separate entrance to meat inspection Room been made with deep freezer & fly proof
11	10.5(5)	Concentrate feed to be herbivores in safari is being provided on the ground. This is unhygienic and prone to bacterial and fungal infestation. It is advised that the same may be provided on raised concrete platforms. Suitable shade may also be provided on top of the platforms for protection of the food from rain. These platforms should be	Six months	complied

		created away from visitors' view and waterholes and the entire structure should merge with the forest environment.		
12	10.5(5)	(a)All the feeding cells should be disinfected and cleaned on day to day basis. Disinfectants like Khorsoline should be used to clean the floors. The cells should also be blow lamped once every week and cleaned food hot water. (b)Leftover food should be disposed of in a manner that it has no adverse impact on the immediate environment and the landscape surrounding the centre. Meat leftovers should be incinerated.	Immediately	Disinfectants like Khorsoline are used to clean the floors. Feeding cells regularly cleaned. Leftover food is properly disposed off
13	10.5(9)	All staff involved in upkeep & healthcare of animals should be subjected to annual health check-up to avoid spread of Zoonotic diseases.	Once in a year	complied
<b>6.Veterinary and Infrastructure Facilities</b>				
14	10.6(3)	The zoo should have Post-mortem Room, Isolation and Quarantine Ward, animal restraining and tranquilizing equipment.	Three months	During evaluation post mortem room was under construction and now it is completed & most of Vet equipments purchased and will be purchased based on requirement including tranquilizing equipment.
15	10.6(5)	A Lab Assistant should be appointed to help the Veterinarian in day to day investigation.	Three months	Will be complied At present the Veterinary Assistant assists the Veterinary Officer.
16	10.6(6)	The zoo should enter into a written agreement with the veterinary college for Round the year veterinary support, Training of zoo personnel and Veterinary internship.	Immediately	Complied

<b>7.Post-mortem and disposal of carcass of animals</b>				
17	10.7(3) )	In the event the Post-mortem being inconclusive and no specific reason for death is identified, the authorities should send sample of tissues, organs, blood & viscera etc. for further examination to the nearest veterinary laboratory having adequate specialization for further investigation. Samples may also be sent to the Indian Veterinary Research Institute being the National Referral Centre.	As and when need arises.	Being followed when need arises
18	10.7(4) )	An incinerator may be installed near the post-mortem room for safe disposal of animal carcasses and other bio-wastes. Carcasses of all large cats shall be disposed of by burning in presence of the Director of the zoo or any officer, in next rank to him and authorized by him in this regards.	Immed iately	Proposal sent to higher authority
<b>9. Acquisition and breeding of animals</b>				
19	10.9(9) )	Effective population control measures should be put in place to have a check on the prolifically breeding species like Chital.	With immed iate effect	Will be complied
20	10.9(10)	Effective safeguards should be put in place to retrieve animals escaping accidentally from the safari park. Action taken be reported to the CZA immediately.	Immed iately	QRT team with nets, tranquilizing equipments, walkie talkie, CCTV support & others with public addressing system been arranged
<b>10.Research activities</b>				
21	10.10	The zoo authorities should engage graduate/postgraduate students in studying the behavioural changes of animals which are replaced from small enclosure to near nature large open enclosure, which will aid in better management by entering into an agreement with nearby institutions such as the North Bengal University & local College.	One Year	Scholars, interns & volunteers are working.

<b>11. Education and outreach activities</b>				
22	10.11(1)	The zoo is constructing a Nature Information Centre (NIC). The plan shared during the evaluation revealed creating an amphitheatre for closed projection and an open-air theatre. It is advised that a detailed proposal for utility of Centre may be prepared period to its commissioning. Similarly , the entrance to the Centre may be designed accordingly to accommodate smooth entry and exit of visitors on a crowded day	Immediately	Complied
<b>12. Visitors' facilities</b>				
23	10.12(2)	The zoo should provide anti-venom and first aid kits in the zoo campus.	With immediate effect	Anti venom procured and stored in zoo hospital
24	10.12(3)	The Safari bus should be made disabled friendly both in terms of embarkation/ disembarkation and seating.	Three months	Exploring the possibilities

### **29. List of free living wild animals within the zoo premises**

As per the short term research project titled "Survey of free living Flora and Fauna of North Bengal Wild Animals Park", the following result in the Phase II of the report has been prepared of the biodiversity of the Park:

Additional Floristic elements in phase-ii survey of Bengal Safari

❖ Tree species :

2 tree species has identified

1. Eugenia stipitata of Myrtaceae
2. Ficus macrophylla of Moraceae

1 shrub species

Eranthemum stipulacea of Acanthaceae

14 herbaceous species

5 epiphytes (Orchidaceae)

7 grasses and sedges (Poaceae and Cyperaceae)

2 dicot species

### **RESULTS:-**

This one year research work from 2017-18 in Bengal Safari recorded a varied faunal diversity. A total of 154 species has been recorded under 144 genera

covering 90 families. All of these are micro and macro fauna and natural inhabitant of this area. This short time research work represents 11 microscopic faunal species, 101 species of arthropods belonging to 54 families and 23 species of birds representing 18 families, Fishes covering 8 species under 6 families, , reptiles represented 7 species, Mammals covering 2 species (Table:2.1.)

**Table: 2.1:** Faunal Diversity of Bengal Safari

Categories	No. of Family	No of Genera	No of Species
Protozoa	1	1	1
Ciliophora	1	1	1
Rotifera	4	5	9
Annelida	2	2	2
Arthropoda	54	95	101
Fishes	6	8	8
Reptiles	2	7	7
Aves	18	23	23
Mammals	2	2	2

The aquatic microscopic species comprises of protozoa, ciliophora, rotifers and cladocerans covering 23 species belonging to 12 families and 18 genera with cladocerans as the dominant species group.

**Table: 2.2:** Annelids of Bengal Safari

Phylum	Order	Family	Species
Annelida	Haplotaxida	Lumbricidae	<i>Eistinea fetida</i>
Annelida	Haplotaxida	Megascolecidae	<i>Polypheritima sp</i>

A total of 101 species of arthropods has been recorded covering 95 genera and 54 families. Order Lepidoptera comprises maximum number of species, ie, 43 species covering 15 families, followed by Coleoptera with 15 species with 6 families, Odonata 8 species covering 3 families, Diptera with 9 species covering 8 families, Hemiptera with 8 species covering 6 families, Arachnida representing 4 species from 4 families, Neuroptera covering 2 species from 2 families followed by Ephemeroptera and Hymenoptera covering 1 species each.(Table: 2.3).

**Table: 2.3:** Arthropods of Bengal Safari

Class	Order	Family	Genera	Species
Arachnida	Araneae	4	4	4

Insecta	Hymenoptera	1	1	1
Insecta	Diptera	8	9	9
Insecta	Hemiptera	6	8	8
Insecta	Coleoptera	7	12	15
Insecta	Lepidoptera	15	42	43
Insecta	Odonata	3	7	8
Insecta	Ephemeroptera	1	1	1
Insecta	Neuroptera	2	2	2
Crustacea	Maxillopoda	1	1	1
3 class	<b>Total</b>	<b>48</b>	<b>87</b>	<b>92</b>

In Order Lepidoptera, 43 species has been recorded in the present research work, which comprises 42 genera of 15 families. Other micro arthropods species are listed in (Table: 2.4).

**Table: 2.4:** Distribution of order Lepidoptera in Bengal Safari

Order	Family	Genera	Species
<b>Lepidoptera</b>	15	42	43

Out of 43 species of Lepidoptera, 11 species representing by the family Lycaenidae and followed by Lycaenidae and Hesperidae with 6 species (Table: 2.5).

**Table: 2.5:** Family wise distribution of order Lepidoptera

Family	Genera	Species
Erebidae	5	5
Geometridae	2	2
Hesperidae	6	6
Lycaenidae	11	11
Lymantriinae	1	1
Noctuidae	1	1
Nymphalidae	3	3
Papilionidae	1	1
Pieridae	4	4
Saturniidae	1	1
Sphingidae	1	1
Geometridae	2	2
Crambidae	3	3
Zygenidae	1	1
Choreutidae	1	1

This short time research also dealt with 9 species of insects under 8 families of order Diptera and 8 species insects under 8 families of order Hemiptera (Table:2.6).

**Table:2.6:** Distribution of order Diptera and Hemiptera in Bengal Safari

Order	Family	Genera	Species
Diptera	8	9	9
Heteroptera	6	8	8

Table 2.7. Represents the families with 15 species of order Coleoptera.

**Table: 2.7:** Family wise species distribution of order Coleoptera

Family	Genera	Species
Carabidae	3	6
Chrysomelidae	3	3
Coccinellidae	1	1
Curculionidae	1	1
Cerambycidae	1	1
Dytiscidae	1	1
Gyriniidae	1	1
Lampyridae	1	1
<b>Total</b>	<b>12</b>	<b>15</b>

**Table: 2.8:** Distribution of order Hymenoptera in Bengal Safari

Order	Family	Genera	Species
Hymenoptera	Vespidae	1	1

**Table: 2.9:** Distribution of order Odonata in Bengal Safari

Family	No. of Genera	No. of Species
3	7	8

**Table: 2.10:** Family wise species distribution of Arachnida

Family	No. of Genera	No. of Species
Araneidae	1	1
Tetragnathidae	1	1
Theridae	1	1
Salticidae	1	1
<b>Total</b>	<b>4</b>	<b>4</b>

**Table: .2.11:** Ichthyofaunal Diversity of Bengal Safari

Category	No.
Order	5
Families	6
Genera	8
Species	8

**Table: 2.12:** Family wise species distribution of Fishes

Families	No. of genera	No. of Species
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Poeciliidae	1	1
Cyprinidae	3	3
Osphronemidae	1	1
Cichlidae	1	1
Mastacambalidae	1	1
Clupeidae	1	1
<b>Total</b>	<b>8</b>	<b>8</b>

**Table: 2.13:** Reptilian Diversity of Bengal Safari

<b>Family</b>	<b>Genera</b>	<b>Species</b>
Colubridae	1	6
Scincidae	1	1

**Table: 2.14:** Avian diversity in Bengal Safari

<b>Order</b>	<b>Family</b>	<b>Genera</b>	<b>Species</b>
15	16	20	20

**Table:2.15:** Species wise distribution of Aves in Bengal Safari

<b>Order</b>	<b>Family</b>	<b>Genera</b>	<b>Species</b>
Accipitriformes	1	1	1
Charadriiformes	3	3	3
Columbiformes	1	4	4
Coraciiformes	1	1	1
Cuculiformes	1	1	1
Passeriformes	8	9	9
Pelecaniformes	1	1	1
Ciconiiformes	2	2	2
Strigiformes	1	1	1
Suliformes	1	1	1

**Table: 2.16:** Mammalian diversity in Bengal Safari

<b>Order</b>	<b>Family</b>	<b>Genera</b>	<b>Species</b>
1	2	2	2