

ANNUAL REPORT

(APRIL, 2016 TO MARCH, 2018)

GHARIAL RESEARCH AND CONSERVATION UNIT, TIKARPADA



Satkosia

A fourteen mile long gorge
and wildlife sanctuary on the
mighty Mahanadi.

Rishu N. Pradhan

SATKOSIA WILDLIFE DIVISION, ANGUL





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FOREWORD

The Gharial Research And Conservation Unit (GRACU) was established at Tikarpada in the year 1975. It has successfully reared 780 nos. of Gharials from the eggs brought from Chambal and Gandak Rivers in incubators and after attaining size of 3 – 4 feet, they were released in the Mahanadi River System. Unfortunately, the no. of Gharials has been reduced to two in the year 2014 due to various natural hazards during the past period. To increase the Gharial population, four no. of Gharials in the year 2015 and six no. Gharials in 2016 have been translocated from Nandankanan Biological Park and released in the Mahanadi River System successfully.

Now six Gharials are existing in Satkosia Gorge and action is being taken to provide them a safe natural habitat in Satkosia Gorge under strict surveillance and monitoring. A part of the GRACU is allowed for display and generating public awareness towards conservation of aquatic fauna. Six Gharials (*Gavialis gangeticus*), six Muggers (*Crocodylus palustris*) and five Terrapins (*Kachuga kachuga*) are reared in the pools and displayed for the visitors.

The Annual Report will provide useful information about Gharial Research And Conservation Unit at Tikarpada. I hope the unique center dedicated to Gharials will immensely help in the protection and conservation of the endangered Gharials in Mahanadi River System.

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(**Dr. S. Panda, IFS**)



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MESSAGE

I am very proud to release the Annual Report on GRACU, Tikarpada for the period from April, 2016 to March, 2018. Gharial Research And Conservation Unit (GRACU), Tikarpada was established in the year 1975 and successfully managed by the Satkosia Wildlife Division. The GRACU has been recognized by the Central Zoo Authority as Mini Zoo during 2006. Gharials procured from Nandankanan Biological Park and rescued from nature are kept in the rearing pools, made them acclimatized with fresh river water and successfully released in Mahanadi river system. Every year during winter the gharial population estimation is carried out by the Division to ascertain the numbers in the natural habitat.

I am very much thankful to Dr. Sandeep Tripathi, IFS, Principal Chief Conservator of Forests (Wildlife) & Chief Wildlife Warden, Odisha for providing me guidance, support and direction for successful management of this Mini Zoo.

I am thankful to Dr. Sudarsan Panda, IFS, Addl.P.C.C.F., Angul & Field Director, Satkosia Tiger Reserve for giving me guidance and direction for development and maintenance of this Mini Zoo.

I am also thankful to Sri Subhendu Prasad Behera and Raj Kishore Swain, ACF Satkosia Tiger Reserve for successful management of the GRACU

Finally I am very thankful to the Range Officer and staff of Tikarpada Wildlife Range in-charge of GRACU stationed at Tikarpada who successfully managing the Gharials Centre and monitoring the Gharials in Mahandi Gorge river system regularly.

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(S.Md.T.Rahman)

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1. INTRODUCTION:

The Satkosia Gorge along the river Mahanadi in Odisha have been a natural habitat for the fresh water crocodilian species especially the Gharial (*Gavialis gangeticus*) and the Mugger (*Crocodilus palustris*). During 1974, the Food and Agricultural Organization (FAO) of the United Nations had recommended a crocodile conservation initiative in the area in view of the dwindling population of the Gharial and Mugger crocodiles and their recovery in the wild habitat.

The Gharial Research and Conservation Unit (GRACU) is located between $20^{\circ} 35' 40.00''$ N and $84^{\circ} 47' 0.4''$ E and $20^{\circ} 35' 26.5''$ N and $84^{\circ} 47' 7.9''$ E

This Mini Zoo is situated at the northern bank of river Mahanadi on the foothill near Tikarpada village. The topography of the area is of undulating, gentle slope in nature with natural drainage system, containing patch of indigenous species of forest cover. The altitude of the Zoo topography varies from 110 mtrs to 140 mtrs above mean sea level.

The conservation unit started during March 1975 as a joint conservation initiative by the State Government with technical support from the UNDP and FAO. Dr. H.R. Bustard from the FAO worked as the Chief Technical Adviser of the project till 1980 and Dr L A K Singh was the Senior Research Officer of the project till 1987. The GRACU has been recognized by the Central Zoo Authority during the year 2006 as a 'Mini Zoo' located in the heart of the Satkosia Tiger Reserve over an area 96387 ha.

The gross area of the GRACU is 7 ha. There are 3 blocks of reptile enclosures having 18 pools of various sizes for housing the fresh water reptiles and rearing of pisces. These enclosures can currently accommodate 100 reptiles. Currently, there are 6 gharials, 6 muggers and 5 terrapins in the centre under rehabilitation.

The Central Zoo Authority vide their Letter No. F. No. 19-46/93- CZA (200)(M) dated 7.8.2006 had renewed the GRACU, Tikarpada as a Rescue and Rehabilitation centre of Freshwater Reptilians including gharial, mugger and terrapins in the state of Orissa up to 31.12.2007. Thereafter the CZA vide their letter no. F. No. 19-46/93- CZA (200)(M) dated 4.3.2009 have given a concept plan for preparation of detail master plan for long term development of GRACU as conservation breeding centre/mini zoo. Accordingly, the GRACU has been recognized as a Mini Zoo and the reorganization has been renewed by the Central Zoo Authority vide their Letter No. F. No. 19-46/93- CZA (200)(NS)/6988 dated 17.4.2015 up to 30.4.2017 conditionally.



INFRASTRUCTURE:-

The following facilities are available in the mini Zoo.

Incubation house, Interpretation centre, Hatchling pools, Breeding pool, Gharial, Rearing pool, Mugger rearing pool, Quarantine pool, Fish pond to meet the food scarcity in emergency, Water storage tank, Terrapin pool, Overhead tank, Foot path for visitors, Drinking water point, Sit outs and base pindies, Watch tower to observe gorge view and crocodile basking, Floating jetty, Educative signage, Internal roads, Office, Staff room, Souvenir shop, Public toilets, Store room and Children park.



INCUBATOR ROOM



CROCODILE
AWARENESS CENTRE



FISH POND - 1



HATCHING POOLS



PRESENT STAFF POSITION:

At present the GRACU is being managed by the Range Officer, Tikarpada, Forester, Tikarpada Section and Forest Guard Tikarpada 'A' Beat. There are 6 Gharial watchers and 2 daily waged animal keepers to manage the daily activities at the centre. These staff presently looks after the maintenance, sanitation and security of the conservation unit.

Name of the post	Post sanctioned	Post filled up	proposed
1	2	3	4
Sr. Vet. Officer	01	Nil	-
Jr. Vet. Officer	01	01	02
Forester	Nil	Nil	01
Forest Guard	Nil	Nil	02
Gharial Watcher	06	06	-
Pool Attendant	01	01	01
Pumpman	01	01	-
Security personnel (Contractual)	Nil	Nil	03
Research Fellow (Contractual)	Nil	Nil	02



VISITOR FACILITIES :-

- Crocodile Conservation awareness centre.
- Sit out
- Dining hall
- Toilet
- Rain shelter


VISITOR FLOW:-

Year	No. of visitors
2014-15	25755
2015-16	21412
2016-17	16544
2017-18	16221

TIMING OF ZOO:-

The facility is open for visitors from 06.00 A.M to 06.00P.M. The GRACU (mini zoo) facility is closed on every Monday.





**DISASTER MANAGEMENT:-
TYPES OF DISASTERS AFFECTING GRACU:**

i. Fire control:

The zoo (GRACU) is situated inside the Satkosia Tiger Reserve in Tikarpada reserved forest. The forest is highly prone to fire during the summer months when the temperatures reach even up to 40 °C. The fires may easily spread to the zoo (GRACU) if adequate precautions are not taken. Maintenance of permanent fire line separating the unit from the continuous forest and ensured to prevent the forest fire and a team of fire watchers with fire fighting equipments to attend any eventually.

ii. Floods:

The GRACU is situated on the banks of river Mahanadi. This makes it vulnerable to floods each year. The floods pose a great danger when the water levels reach the animal enclosures. The floods may damage the animal enclosures, and flood the enclosures and may destroy the infrastructure. Preventive strengthening measure has been taken to meet the requirement.

iii. Food supply:

Feeds supplied to the zoo animals by the local fisherman. During high flood the fish catch is reduced, causing scarcity as no fisherman is fishing during high flood. To meet the eventualities alternative supply chain has been established to procure from other place.



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HUMAN RESOURCES

Forest Ranger	Forester	Forest Guard	Gharial Watcher
01	01	01	06
Jayanta Pattanaik	Anil Kumar Bodaik	Annapurna Sahoo	Manas Ranjan Tripathy
			Purusottam Nayak, Pool Attendant
			Anita Behera
			Kumari Jani
			Sanjay Sitha

CAPACITY BUILDING TRAINING

During 2017-18 01 Nos. of Capacity building training is organized at Bhubaneswar at regional level on the theme "CZA Vision 2030". One Forester and one T.S. of GRACU have attended the programme.

DEVELOPMENTAL ACTIVITY

BUDGET:-

Year	Scheme	Allotment in Lakh	Expenditure in Lakh	Works under taken
2016-17	State Plan Wildlife Protection	3.00	3.00	Feeding charges of crocodile & POL for diesel pump.
2017-18		3.00	3.00	Feeding charges of crocodile & POL for diesel pump.
2016-17	State CAMPA 2016-17	15.00	15.00	Maintenance of motor boat and CRC at Tikarpada, fixing of glowsign boards 36 Nos., Stainless steel stand 1 No., approach road in GRACU, preparation of Master plan map in autocad for GRACU & Upgradation of interpretation hall at Tikarpada
2017-18	State CAMPA 2017-18	20.00	20.00	Construction of new pool, construction of guard room at GRACU, Tikarpada & construction of footpath for visitors.

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CENSUS AND POPULATION MONITORING:- 2016-17

Location of crocodiles	Gharial	Mugger	Total
Mahanadi river	09	65	74
Water bodies in Satkosia (WL) & Athmallik Division	00	21	21
GRACU, Tikarpada	07	04	11
Total	16	90	106

2017-18

Location of crocodiles	Gharial	Mugger	Total
Mahanadi river	07	71	78
Water bodies in Satkosia (WL) & Athmallik Division	00	18	18
GRACU, Tikarpada	06	06	12
Total	13	95	108

LIST OF REPTILES IN MINI ZOO (GRACU) AS ON 31.01.2017

Reptiles						
Sl. No.	Name	Scientific name	Male	Female	Un-detected	Total
01	Gharial	<i>Gavialis gangeticus</i>	01	06	00	07
02	Mugger	<i>Crocodylus palustris</i>	03	02	01	06
03	Terrapins	<i>Kachuga Kachuga</i>	00	05	00	05
Total			04	13	01	18

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LIST OF REPTILES IN MINI ZOO (GRACU) AS ON 31.01.2018

Reptiles						
Sl. No.	Name	Scientific name	Male	Female	Un-detected	Total
01	Gharial	<i>Gavialis gangeticus</i>	01	05	00	06
02	Mugger	<i>Crocodylus palustris</i>	03	02	01	06
03	Terrapins	<i>Kachuga Kachuga</i>	00	05	00	05
Total			04	12	01	17



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ANNUAL INVENTORY REPORT 2016-17 (AS ON 31.03.2017)

Sl.No.	Animal Name	Scientific Name	Opening Stock As on 01.04.2017	Births	Acquisitions	Disposals	Deaths	Closing Stock as on 31.03.2017
Reptile								
1	Gharial	Gavialis gangeticus	1 6 0 7	Nil	Nil	Nil	- - -	1 6 0 7
2.	Mugger	Crocodyles Palustris	3 2 1 6	Nil	Nil	Nil	Nil	3 2 1 6
3.	Turtle	Kachuga kachuga	0 5 0 5	Nil	Nil	Nil	Nil	0 5 0 5
Total Reptile			4 8 1 13	Nil	- - -	- - -	- - -	4 8 1 13
Total Animals			4 13 1 18	Nil	- - -	- - -	- - -	4 13 1 18

PROFORMA FOR DEATH REPORT

DEATH REPORT FOR THE YEAR: 2016-17

Animal Name (With individual identification mark, if any)	Scientific Name	Sex	Date of Death	Cause of Death
NIL				

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ANNUAL INVENTORY REPORT 2017-18 (AS ON 31.03.2018)

Sl.No.	Animal Name	Scientific Name	Opening Stock As on 01.04.2017	Births	Acquisitions	Disposals	Deaths	Closing Stock as on 31.03.2018
Reptile								
1	Gharial	Gavialis gangeticus	1 6 - 7	Nil	Nil	Nil	- 1 -	1 5 - 6
2.	Mugger	Crocodyles Palustris	3 2 1 6	Nil	Nil	Nil	Nil	3 2 1 6
3.	Turtle	Kachuga kachuga	- 5 - 5	Nil	Nil	Nil	Nil	- 5 - 5
Total Reptile			4 8 1 13	Nil	- - -	- - -	- 1 -	4 7 1 12
Total Animals			4 13 1 18	Nil	- - -	- - -	- 1 -	4 12 1 17

PROFORMA FOR DEATH REPORT

DEATH REPORT FOR THE YEAR: 2017-18

Animal Name (With individual identification mark,if any)	Scientific Name	Sex	Date of Death	Cause of Death
Gharial Detail Measurement Length- 9'.2" Chest Girth-3'.5" Tail length- 4'. 4" Snout length-1'.0"	<i>Gavialis gangeticus</i>	Female	25.04.2017	Death due to tuber culosis

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**ECOTOURISM:-
NATURE CAMP**

TIPPS (TIKARPADA PARIBESHA PARYATAN SAMITI) :-

Accommodation facilities for tourist managed by TIPPS with all infrastructure and other related requirements provided by the Forest Department.

Year	Name of Nature Camp	Number of Visitors	Total Amount Collected	STCF Share	EDC Share	ETG Share	Govt. Revenue	Corpus fund	Expenditure fuel/ mail
2016-17	TIPPS	906	1158747	115875	115873	92699	1800	-	-
	FRH	201	52700	50900	-	-	-	-	-
	Boating	1981	297150	148575	14857.50	-	-	-	133717.50

Year	Name of Nature Camp	Number of Visitors	Total Amount Collected	STCF Share	EDC Share	ETG Share	Govt. Revenue	Corpus fund	Expenditure fuel/ mail
2017-18	TIPPS	857	1301329	15070	81142	1072971	66073	66073	-
	FRH	110	27950	26700	-	-	1250	-	-
	Boating	3215	482250	241125	24112.50				217012.50



RESCUE AND REHABILITATION:-

One Mugger Crocodile rescued from Majhipada RF Comptt No.1 near Ganda nalla and kept after treatment in breeding pool at GRACU, Tikarpada and subsequently released into nature.

IMPORTANT PERSONS VISITED THE ZOO:-

Shri Bipul Chakrabarty, Director, Tata Steel Zoological Park, Jamshedpur was visited GRACU, Tikarpada during the period of 07.01.2013 to 09.01.2013 for evaluation of Mini Zoo.

Shri B.G.Mugadur, Deputy Conservator of Forests (Retd.), former Executive Director, Sri Chamarajendra Zoological Gardens, Mysore was visited GRACU, Tikarpada on 29.11.2014 for evaluation of Mini Zoo.

Shri Bipul Chakrabarty, Director, Tata Steel Zoological Park, Jamshedpur was visited GRACU, Tikarpada on 14.03.2017 for evaluation of Mini Zoo.

Sri Braja Kishore Pradhan, MLA, Talcher visited GRACU, Tikarpada on Dt. 17.02.2016.

Sri Mohmod Kalal, IFS, Deputy Director, Ministry of environment and Forest Government of India, New Delhi visited GRACU, Tikarpada on 14.09.2016.

Dr. Elisabeth Epstein, Doctor, Associate Professor Stockholm, Sweden visited GRACU, Tikarpada on 17.10.2016.

Sri D.K. Verma, Additional Principal Chief Conservator of Forests visited GRACU, Tikarpada on 27.12.2016.

Sri A.K. Ray ADG, Prison visited GRACU, Tikarpada on 29.12.2016. Hon'ble Justice S. Puiahom Judge, Odisha High Court, visited GRACU, Tikarpada on 31.12.2016.

Pramoda Kumar Mekap, Addl. P.C.C.F visited GRACU, Tikarpada on 16.12.2017.

M.B Parameswar, IAS visited GRACU, Tikarpada on 28.12.2017

Gurtia B.K. Mishra, Chairperson, OHRC, Bhubaneswar visited GRACU, Tikarpada on 02.03.2018

Prof. Dr. A. Debata, Director, CES visited GRACU, Tikarpada on 03.03.2018



VETERINARY SECTION:-

There is a veterinary section inside the zoo. One Veterinary Assistant Surgeon is posted recently. The Veterinary Assistant Surgeon, Bantala and the Veterinarians from the District headquarters of Angul are also attending on special needs. Besides, on emergency Specialists and Veterinary Doctors are called from OUAT, Bhubaneswar, Nadankanan Zoological Park, Bhubaneswar to address the critical cases as and when required.

Action is being taken for posting of another full time Veterinary Asst. Surgeon for the zoo as well as Tiger Reserve.

SIGNIFICANT ACHIEVEMENTS:-

GRACU at Tikarpada had achieved distinction for restoring endangered Gharial population in Mahanadi at a time when the extinction of Gharials in the wild was already get in. Due to the conservation efforts, the extinction of the endangered reptile could be avoided.

The GRACU had done pioneering work in crocodile conservation in India. Conservation breeding, release of reared crocodiles into the wild and its rehabilitation had been some of the challenging activities carried out by the centre.

In brief the conservation breeding and rehabilitation activities carried out by GRACU are as follows:

- Collection of wild eggs for incubation, rearing of hatchlings upto 1 m long and releasing the hatchlings in Satkosia Gorge for rehabilitation.
- During 1975-1976, 34 Gharial eggs were collected for hatchling, but proved infertile.
- During 1975, 72 eggs were brought from Gandak River (Bihar) and 42 eggs hatched out of them. First hatching happened on 18.6.75. This may probably be the first hatchling to hatch in captivity in the world.
- In September 1975, 10 hatchlings were brought by UNDP for rearing at Tikarpada.



- Out of total 52 hatchlings in the centre, 41 survived till 1979 and had attained a maximum length of 1.4 meters and maximum weight of 6 kg.
- During 1976, 230 eggs were brought from Nepal, out of which 40 survived.
- During December, 2016, Six female gharials were released into the Satkosia Gorge for supplementation of existing gharial population.
- The GRACU has been successfully carrying out conservation breeding programme on Gharials and Mugghers for over decades. The centre had provided many insights into the captive breeding of fresh water reptiles.

TRANSLOCATION OF GHARIALS FROM NANDANKANAN ZOOLOGICAL PARK TO GRACU, TIKARPADA:-

On 24.02.2014 and 07.03.2015 fifteen no. of Gharials were translocated from Nandankanan Zoological Park vide Memo No. 553 Dt. 24.02.2014 of Deputy Director, Nandankanan Zoological Park and permission Letter No. F.No.23-1/2014-CZA (M) / 4645 Dt. 11.04.2014 of Central Zoo Authority, Government of India Ministry of Environment & Forest.



NATURE TREKKING AND AWARENESS PROGRAMME FOR SCHOOL STUDENTS



NATURE AWARENESS PROGRAMME FOR STUDENTS AT GRACU







SITTING CUM DINING SPACE FOR VISITORS



SIT OUT



SIT OUT



SANITIZING ON POTASSIUM WATER



SANITIZING ON POTASSIUM WATER



PREPARATION OF FOOT BATH



CCTV SURVEILLANCE



INTERPRETATION HALL



WALKING PATH FOR VISITORS



HATCHING POOLS



WALKING PATH (PAVEMENT)



CROCODILE POOL



APPROACH ROAD (STEPS) TO GHAT



RIVER CRUISE IN MAHANADI



TERRAPIN POOL



SATKOSIA WILDLIFE DIVISION, ANGUL