

**MANAGEMENT PLAN**  
FOR  
**SATKOSIA GORGE SANCTUARY**

**Financial Year**  
**(2007-08 to 2016-17)**

Divisional Forest Officer  
Satkosia Wildlife Division, Angul.

## FOREWORD

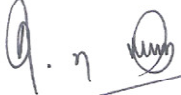
**R. Nagaraja Reddy, IFS  
Conservator of Forests,  
Angul Circle**

The Satkosia Gorge Sanctuary has assumed a special significance in our effort for Bio-diversity Conservation and Wildlife Management. The importance of sanctuary has increased with the declaration of the Tiger Reserve in principle and proportionately the responsibilities of Sanctuary Authorities. The sanctuary comprises moist deciduous forest to dry deciduous forest in association with dry Bamboo brakes and dry tropical riverain forest. The faunal composition of the sanctuary is also much varied. The sanctuary also encompasses about 100 revenue villages and the life of those villagers is woven around the forests. The management of the sanctuary is therefore a challenge to the foresters in the context of Bio-diversity Conservation and Wildlife Management under a sustainable Forest Development mode. Preparation of its Management Plan is also equally difficult to provide a holistic perspective taking in to account the several non-complimentary demands or requirements.

However, the Revised Management Plan, prepared by Shri P.C.Mishra, OFS(I) has been further revised by Shri Susanta Nanda, IFS and his Asst. Conservator of Forests Sri H. B. Udgata, OFS(II). It has provided a comprehensive and holistic management perspective to the Satkosia Gorge Sanctuary. The skillful integration of habitat requirement with social imperatives is the hall mark of this Revised Management Plan. The problems of the sanctuary is scientifically analysed through matrix systems thereby solutions are approached in realistic and rationale manner. The implementation of the plan in its true letter and spirit will undoubtedly elevate the sanctuary to one of the sustainably managed protected areas of our country.

The authors of this Revised Management Plan have completed this arduous exercise of preparation of Revised Management Plan with dedication and commitment and with sound technical inputs, that too in a record time. The authors deserve a special accolade for their efforts. His team members particularly Sri H.B.Udgata, OFS(II), Assistant Conservator of Forests and the Range Officers of the division also deserve special appreciation for their contribution to the making of this plan.

Angul  
24.09.2007

  
(R. Nagaraja Reddy)

OFFICE OF THE PRINCIPAL CCF (WILDLIFE) & CHIEF WILDLIFE WARDEN, ORISSA  
5<sup>TH</sup> FLOOR, B.D.A. APARTMENT, PRAKRUTI BHAWAN, NILAKANTHA NAGAR,  
NAYAPALLI, BHUBANESWAR- 751012.

Email: [cwlbbsr@ori.nic.in](mailto:cwlbbsr@ori.nic.in) Website: [www.wildlifeorissa.in](http://www.wildlifeorissa.in)

Memo No. 177 /1WL (D) 17 / 2007.  
Dated, Bhubaneswar, the 5<sup>th</sup> January, 2008.

To  
The Divisional Forest Officer,  
Satkoshia Wildlife Division, Angul.



Sub: Management Plan of Satkoshia Wildlife Sanctuary.

Ref: Letter No.562/ 1WL (D)-04/07 dt.7.9.2007 of CF, Angul Circle.

The draft management plan of Satkoshia Wildlife Sanctuary submitted vide above cited letter is approved. All the maps have to be authenticated with dated seal and signature of the Divisional Forest Officer and should be countersigned by Conservator of Forests. Executive summary should include salient features as well as site specific plan prescriptions of each chapter along with budgetary provision. The Satkoshia Sanctuary is now a part of Satkoshia Tiger Reserve notified on 31.12.2007. This may be mentioned in the Plan document and a copy of the notification should be annexed. The critical tiger habitat of Satkoshia Tiger Reserve has been identified and notified by the Government. This development may be included in the management plan. The Tiger Conservation Plan along with maps in GIS format and soft copy may please be submitted early.

Sic. Mohanty  
Principal CCF (Wildlife) & Chief Wildlife Warden, Orissa. 1.1.08

## A C K N O W L E D G E M E N T

Preparation of a plan is a stupendous task. That too within a short period. It is only possible here since different site specific problems have been identified earlier during my long stay in this Division. All the lacunas of the existing plan have been overcome and all actions have been taken to make this plan a presentable one.

I am highly thankful to Sri S.C.Mohanty, IFS, Principal Chief Conservator of Forests (Wildlife) & Chief Wildlife Warden, Orissa who has all along advised for timely revision of the existing plan for making it more site specific and need based. He has also taken all pains in allotting the funds for its preparation and advised to make this plan an exemplary work for reference of others.

I am highly thankful to Sri A. K. Mohapatra, IFS and Sri R. Nagaraja Reddy, IFS, Conservator of Forests, Angul Circle for his valuable suggestions for making this plan more practical oriented in conservation of flora & fauna and at the same time avoiding the enmity of the villagers living in an around the sanctuary with the sanctuary management for generating more employment opportunity through ecotourism and other means.

I am highly thankful to Sri S.Dash, OFS (I), Divisional Forest Officer, Mahanadi Wildlife Division, Nayagarh for providing some vital data of his Division pertaining to Satkosia Gorge Sanctuary in preparation of this plan.

I very much thankful to Sri H.B. Udgata, OFS (II), Asst. Conservator of Forests of this Division who has taken lot of pain to write major part of this revised Management Plan.

I express my heartfelt gratitude to Dr. Chandra Shekhar Kar, Sr. Research Officer, O/O Principal Chief Conservator of Forests (Wildlife) & Chief Wildlife Warden, Orissa for his valuable suggestions and guidelines in preparing the Plan.

I extend my sincere thanks to Sri Girish Chandra Pradhan, Stenographer of Satkosia Wildlife Division & Sri Ruchir Kumar Pradhan, P.A. of Conservator of Forests, Angul Circle for typing, editing and printing the revised Management Plan.

I am thankful to Sri Pabitra Mohan Sahu, Statistical Field Surveyer for preparing Maps of the Plan.

P.C.MISHRA, IFS

Place:- Angul

Divisional Forest Officer  
Satkosia Wildlife Division, Angul.

## INTRODUCTION

This revised Management Plan for Satkosia Gorge Sanctuary the second tiger reserve of Orissa, has been prepared for a period of 10 years, from 2007-08 to 2016-17 with an aim to conserve the rich biodiversity of the sanctuary in general and Mahanadi river system and its adjoining land scape in particular, with active support and role of the local community.

Sri Arun Kumar Mishra, OFS-II wrote the first Management Plan for the sanctuary for the period 2000 to 2010. This has not been approved by the appropriate authority till date as it required certain modifications, though it is being followed by the sanctuary authority for all practical purposes. This comprehensive management plan has been written under the guidance of Sri Suresh Chandra Mohanty, IFS, Principal Chief Conservator of Forests (Wildlife) and Chief Wildlife Warden, Orissa encompassing many new features, aiming to reduce the dependency of local population on the sanctuary and putting a stop to the habitat degradation by all possible approach.

This plan has been prepared following the guidelines prescribed in “A Manual for Planning Wildlife Management in Protected Areas and Managed Forest” written by Sri Vishwas B. Sewarkar, Former Director, Wildlife Institute of India, Dehra Dun and published by the same institute. The objectives, strategies and prescriptions written in this plan are judicious, practical, economic, appropriate, site specific and justifiable.

## THE EXECUTIVE SUMMARY

### PART- 'A': Salient Features:

1. This management plan aims at over all development of the Satkosia Gorge Sanctuary, its wildlife, their habitat, the people and their livestock living in and around the sanctuary.
2. This plan has identified the significant values of the sanctuary. This sanctuary is the habitat for flagship species like Tiger, Elephant, Chowsingha, Giant squirrel, Gharial and Mugger, besides many lesser fauna.
3. The sanctuary is having total geographic area of 795.59 Sq.Km. spreads over 4 revenue districts namely, Angul, Cuttack, Boudh and Nayagarh which has been taken as score area of the sanctuary. The buffer area around the sanctuary covers adjoining forests and villages having 179 41 Sq.Km. area.
4. It has been notified vide Notification No. 12727/FF&AH dtd. 19.05.1976 of Govt. of Orissa U/S 18(1) of the Wildlife (Protection) Act,1972.
5. It has 215.2 Kms. of external boundary. 169.4 Kms. of R.F. and other forest boundary and 322 km. of village boundaries.
6. The elevation varies from 37 mt. to 932 mt. The lowest point is on the bank of river Mahanadi and the highest peak is Sunakhania ( 932 mt.) in Padmatola R.F.
7. The sanctuary comprises part of Mahanadi river basin and Brahamani river basin, where enumerable seasonal nallas and streams are present within the valleys of enumerable hills of the rugged terrain.
8. The annual rainfall varies from 1250 mm to 1700 mm. Maximum temperature in May and June varies from 45° C to 47° C. The winter temperature in night goes down to 6° C to 11° C. Relative humidity varies from 77% to 80%.
9. The sanctuary forms the meeting point of two biotic provinces of 6-Deccan peninsula namely 6B- Chhotnagpur Plateau and 6-C Eastern ghat. The terrain is rugged with hills.
10. The forest is mostly deciduous having plants of *Bambusa aurundinacea*, *Dendrocalamus strictus* and Ficus species. Sal, Teak, Bija, Terminalias, Myrabolan, Bredelia are among common plant species. The plants found on the river bank are *Syzygium cumini*, *Barringtonia* spp. *Anogeissus* spp., *Strichnus noxvomica*, *Deris alba*, *Terminalia arjuna*. There are 400 plant species identified.
11. Census report says there are 195 elephants ( May-2007) , 17 tigers and 34 leopard(2004) Muggers are also found in adjoining village ponds. There are lot many Gaur, Chousingha, Dhole, Giant squirrel, flying squirrel, wild pig, sambar, spotted deer, barking deer in the sanctuary. Besides, 183 species of fishes, 161 species of birds including winter migratory birds, 66 reptilian species and 7 amphibians including tree frogs are seen in the sanctuary.

12. Fire incidents during summer, grazing and weed growth are the limiting factors for the wild animals, where as illicit felling, poaching and over fishing cause threat to them.
13. There are 99 revenue villages and 3 forest villages situated within the limit of the sanctuary which are creating tremendous biotic pressure on the sanctuary and are depending on the sanctuary for their day to day life and livelihood.
14. Man-Animal conflict is a common phenomena noticed in the sanctuary, Human kill, cattle kill, crop raid and house damage by elephant and other wild animals make people hostile.
15. Tikarpada, Labangi and Baliput are the important tourist places which attract most of the day picnickers. There are Forest Rest Houses to accommodate meagre number of tourists.
16. There are 4 watch towers and 16 game tanks in the sanctuary.

**PART- 'B': Plan prescription:**

1. The goal and 6 objectives of the management have been set in 3 priority sectors.
2. Various problems have been identified and prioritized through Problem Matrix exercise
3. Care has been taken to set specific objectives, strategies and activities under different zone plans and them plans to over come the identified problems so as to upkeep the values of the sanctuary.
4. **CORE ZONE** of the sanctuary which has been divided into 4 zones of Management namely **Wilderness Zone, Eco development Zone, Eco tourism zone and Restoration zone**. The **BUFFER ZONE** is constituted around the sanctuary taking 100.14 Sq. Km. of R.Fs as Wilderness zone and 79.27 Sq.Km. of village area as Eco development zone, which are continuous to the forests of the sanctuary. Zonation has been made to provide exclusive treatment in each zone. The treatment which is to be given in more than one zone has been listed under the Theme Plan.
5. Both are further divided into 4 management zones namely, Wilderness Zone, Eco development zone, Eco tourism zone and Restoration zone, to provide exclusive treatments in each zone. The treatments, which are to be given in more than one zone, have been listed under theme plan.
6. The sanctuary is vulnerable to illicit felling, poaching and forest fire.
7. Looking in to the current staff position, their age and health condition prescriptions have been made to take assistance from Police, OSAP, Ex-Service men, Private security and to engage daily waged selected able bodied local youth as elephant trackers, anti smuggling squad, anti poaching squad, fire fighting squad, protection squad.
8. Emphasis has also been given to improve the staff amenities, their health condition and their family welfare.

9. Prescriptions have been given for infrastructural development in the sanctuary, which includes maintenance of existing roads, maintenance of existing buildings and construction of new ones for office, quarters, barrack, rest house, interpretation centre, dormitory, amphitheatre, animal rescue centre, veterinary hospital, etc. Infrastructural development includes maintenance and purchase of VHF sets, vehicles, arms and ammunitions.
10. It is felt that the local villagers are unhappy with the sanctuary authority due to declaration of sanctuary. Therefore more emphasis has been given on Eco development activities.
11. Steps have been prescribed to mitigate human-wildlife conflict, to improve socio-economic status of the people dwelling in Core and Buffer Zones by providing them employment opportunities, alternate livelihood options so that their dependency on sanctuary is reduced
12. Farm forestry and pasture land development in village areas have been recommended as an alternative to forest produce like fuel wood and fodder.
13. Irrigation facilities with supply of inputs, subsidy for scientific agriculture have been suggested.
14. Promotion of drinking water facilities, free health camps for human and livestock and creation of essential village asset have been recommended as Trust building activities.
15. Satkosia is rich in flora, fauna and scenic places to attract large number of tourists. In order to facilitate their visit, movement, stay, fooding, desired services, and in order to provide them better interpretive services, environment education, various activities have been recommended.
16. Two NGOs namely TIPPS,(Tikarpada Parivesh Paryatan Samiti) and PARIVESH consisting of local people have been organised to provide better services to the visitors and to conduct package tours, adventurous trekking, nature camp, nature trail, boating and picnics. Opportunities for children, large tents for stay, interpretation centre, Amphi Theater for environment education have been provided in the plan.
17. Soil and moisture conservation measures including loose boulder check dams gully plugging and inverted bandhara over 27 important watersheds have been prescribed to treat one by one starting from ridge to valley, so that ground water recharge is possible to make water availability in the nallas round the year.
18. Habitat improvement includes grazing land development, plantations, creation and maintenance of meadows, water holes, salt licks, SSO of bamboo, thinning in JVP plantation, weed eradication, grazing control. Activities for all such strategies have been prescribed in the plan.
19. Immunisation of domestic cattle and their treatment for epidemic diseases have been prescribed as a part of preventive measures to prevent transmission of diseases from domestic animals to wild animals.



20. As regards ethno botany, steps have been indicated to identify local Vaidyas, to organise them and utilise them in identifying, preserving and promoting the medicinal herbs available in the sanctuary and promote their pharmacy for curing dangerous diseases.
21. Scope is there to promote the traditional skills, crafts of the tribes dwelling inside the sanctuary.
22. Avenues for conducting research in the sanctuary have been narrated. The field of study has been decided. All the renowned research organisations will be asked to carry out their study.
23. Funds will be arranged from central and state government and from many sponsoring, funding institutions like IUCN, UNDP, WWF etc.
24. It has been proposed to establish observatories, library, preservation plots and a laboratory for facilitating study and research.
25. In the monitoring chapter, detail protocols for monitoring of wild animals, their health, vegetation, habitat quality, capacity building, protection measures, fire control measures, tourism, and eco development have been prescribed which will help the managers to manage the sanctuary effectively.
26. Training includes orientation of staff, on job training, formal course training, and instrument handle training. It has been proposed to make the entire sanctuary as a learning centre for staff of other divisions.
27. To create awareness among the people for conservation of forest and wildlife many more methods have been prescribed which includes, pada yatra, rally, street play, publications involving local NGOs, school students and local people.
28. Provision of giving rewards, incentives and prizes are there to encourage the people and local organisations in participating awareness campaigns for the cause of protection.
  
29. In the chapter organisation and administration suggestions have been given to ratify the boundary of the sanctuary, to engage seasonal staff to assist the regular staff, to fill up the regular vacancies by way of fresh recruitment.
30. Emphasis has been given to provide staff amenities, staff colony and to provide special incentives and mobile health service to the staff working in unhealthy atmosphere of interior places.
31. In the chapter 11, detail budget for 10 years of plan period has been given for estimated cost of Rs.65.8575 crores. 28.23 % of total budget is earmarked for Soil and Moisture Conservation, 19.08 % for Forest protection, 16.63 % for infrastructure development, 13.98 % for Habitat improvement, 10.65 % is earmarked for Eco-development and rest 11.43 % is earmarked for other different activities. Year wise break up with physical and financial target have been given in chapter-12.
32. It is believed that this management plan will bring a dramatic change in conservation, promotion and propagation of wild animals of the sanctuary.

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**PART – I**

**CHAPTER – 1**

**INTRODUCTION TO THE AREA**

**1.1 Name, location, constitution and extent.**

**1.1.1. Name – Satkosia Gorge Sanctuary.**

**1.1.2. Location :**

Satkosia Gorge Sanctuary is the second largest and the second oldest sanctuary of the State of Orissa, situated at its heart on either side of River Mahanadi, including the Gorge portion. The gorge is narrow but very deep having strong under currents of water. Its length, as the name speaks is ‘7 Kosa’, which is equivalent to 22.4 Kms (1 Kosa = 2 miles). The part of sanctuary north of river Mahanadi comes under Angul and Cuttack Revenue Districts and the part south of it comes under Boudh and Nayagarh Revenue Districts.

The district wise area is as detailed below ( **in sq km**).

Total Area of Sanctuary	795.59
Area in Angul district	453.25
Area in Cuttack district	76.76
Area in Nayagarh district	147.67
Area in Boudh district	117.84

The constitution of area of this Sanctuary as acquired from previous Divisions along with other areas is as follows (all in Sq km):

Angul division	418.52
Athmallik division	14.21
Nayagarh division	112.53
Boudha division	68.61
Athgarh Division	13.75
Unclassed forests	0.178
Mahanadi river	40.1
Village area	137.622

The northern portion of the sanctuary is managed by Satkosia Wildlife Division with headquarters at Angul, comprising the sanctuary portions of Angul & Cuttack revenue districts covering 530.01 Sq. km. of area. Similarly the Southern portion of the sanctuary is managed by Mahanadi Wildlife Division with headquarters at Nayagarh ,comprising parts of Nayagarh & Boudh revenue districts covering 265.51 Sq. Kms of area. The forest area and list of different types of forests in **Appendix No.1**

The geographical co-ordinates within which Satkosia Gorge Sanctuary is located is given below:



Latitudes	Longitudes
20° 25' 12" N	84° 39' 00" E
20° 45' 36" N	85° 05' 24" E

Biogeographically the sanctuary comes under Gadjat hills subdivision of 6D Chhotnagpur Plateau Biotic Province, which is under 6- Deccan Peninsular zone as per the classification adopted by Rodger's and Panwar (1988).

### 1.1.3. **Extent and constitution of Satkosia Gorge Sanctuary**

Total geographical area of the sanctuary is 795.52 Sq. kms., including 30.1 Sq.Km. of river Mahanadi. There are 15 Reserved Forests, 3 blocks notified under section 4 of Orissa Forest Act, 1972 and 4 blocks demarcated but not notified, inside the sanctuary. (Details of the same along with notification is given in **APPENDIX- 2**)

Satkosia Gorge sanctuary was notified u/s 18(1) of the Wildlife (Protection) Act 1972 vide Government of Orissa, Forest, Fisheries and Animal Husbandry Department Notification No.12727/FFAH Dt.19.05.1976 ,which is enclosed in (**Appendix-3**).

The whole sanctuary was earlier managed by Divisional Forest Officer, Wildlife, Angul vide Notification No.8F(W)3/84-185951/FFAH. Dt. 01.4.1984. Subsequently as per Government of Orissa, Forest & Environment Department Resolution No.13060/F&E Dt.12.7.1999

(**Appendix-4**), the Northern part of the sanctuary measuring 530.01 Sq. kms including river Mahanadi was kept under the territorial jurisdiction of Satkosia Wildlife Division and the Southern part of the sanctuary measuring 265.51 Sq.Km. was brought under the territorial jurisdiction of newly created Mahanadi Wildlife Division, whose headquarters earlier was at Phulbani, but now at Nayagarh.

## **Genesis of Satkosia Gorge Sanctuary :**

Mahanadi Gorge is the natural home of 2 endangered fresh water crocodilian species, namely Gharial (*Gavialis gangeticus*) and Mugger (*Crocodylus palustris*). To protect the depleted crocodile population, the Government of Orissa, Forest Department decided to start a breeding programme of crocodiles during March 1974. Dr. H.R.Bustard, an FAO Consultant on crocodiles visited this place during June 1974 and was surprised to see the natural habitat. He recommended for protection of the gorge ecosystem and its catchment as a sanctuary. Basing on his recommendation Government of Orissa declared the area as Satkosia Gorge Sanctuary during 1976.

### **1.2 Approaches and Access :**

The headquarters of the Satkosia Wildlife Division is at Angul situated on N.H. 42, at a distance of 105 Km to the West from Manguli chhak, the place where N.H. 42 meets N.H. 5. It is 161 Kms from the State capital, Bhubaneswar.

The headquarters of the Mahanadi Wildlife Division is Nayagarh , which is 80 Kms. from Bhubaneswar.

Pampasar, the entry point of Sanctuary from North side is 188 Kms from the State capital and 30 Kms from the Sanctuary headquarters Angul. The Division headquarters of Mahanadi Wildlife Division is at Nayagarh, which is also the district headquarters, and is 80 Kms from the State Capital. From Nayagarh, the Sanctuary can be approached through the entry point at Chhamundia, which is 60 Kms from Nayagarh via Gania. The sanctuary can also be approached from Boudha, district headquarters via Kusanga.

The nearest Rail head on North side is Angul and on South is Khurda Road, on Howrah – Chennai Railway line of East Coast Railways. The nearest Airport is Bhubaneswar.

## 1.2. Statement of Significance :

Satkosia Gorge Sanctuary has of tremendous genetic and ecological importance as it is the wet portion of Deccan Zone. It has a significant elephant population in deciduous forests. The Sanctuary is also important for the natural habitat of two endangered species of fresh water crocodilians viz. Gharial and Mugger, and a sizeable population of Tiger, Leopard, gaur, Sambar, Chousingha and Barking deer. Large population of Giant squirrel is sighted on the canopy cover of the forest. Rare and endangered birds and butterflies are very common. 22.4 Km long stretch of Satkosia Gorge of Mahanadi river harbours a large population of varied fishes and aquatic fauna.

Temple of Goddess Binikei, Kankei, Baigani Parbata, Bhimdhara fall and proposed Crocodile Rescue & Rehabilitation Centre at Tikarpada with the manificent view of the Gorge attract tourists in to the sanctuary through out the year. Satkosia is famous for its unique gorge eco-system and it serves also as a major watershed for the entire region. The magnificent Hinjala, Dhauranja, Kochila and Phasi forests on the bank of river Mahanadi are typical of riverain forests. Bamboo brakes consisting of two species of bamboo, namely Bambusa arundinaceae and Dendrocalamus strictus are common to this Sanctuary.

Satkosia also represents the endemic life forms of both the biotic provinces in its transitional zone. Geologically speaking, the ghats formed the land bridge for faunal migration between Holarctic, Indo-Chinese and Indo Malayan regions on one hand and the Western Ghats on the other. It forms an important catchment of lower Mahanadi basin.

The positive role these catchment forests in the prevention of the gorge siltation and maintenance of a specific desirable depth of water can hardly be over emphasized, particularly for the endangered gharial and for spawning sites of commercially important carps and prawns.

The avifauna of Satkosia is rich and varied with resident birds viz. Emerald dove, Malabar pied hornbill, Shaheen Falcon, Yellow legged buttom quail, Malabar trogon, Hill myna, Great stone Plover and Stork billed kingfisher. The migratory birds include Brahminy ducks, Bar-headed geese, Pintails etc.

VALUES IN SCALE OF PRIORITIES OF SATKOSIA GORGE SANCTUARY

No.	Value Category	Constituents
1	Global	Most <i>endangered</i> Gharials, endangered Tiger, sizeable Central Elephant and Chousingha population.
2	National	Southern most <i>natural home</i> of Gharials in fast flowing river Mahanadi contributing to a <i>distinct gene pool</i> . Gorge supporting four species of <i>endangered</i> Turtles- the conservation of which is of National priority. .
3	Regional	Biogeographically, meeting point of two <i>biotic provinces</i> contributing to assemblage of flora & faunal extravaganza . <i>Biodiversity</i> is one of the maximum.

## **CHAPTER – 2**

### **BACKGROUND INFORMATION AND ATTRIBUTES**

#### **2.1. Boundaries :**

##### **EXTERNAL :**

The details of external boundary of Satkosia Gorge Sanctuary has been described in the Notification No.12727/FFAH Dt.19.05.1976 of Government of Orissa, Forest, Fisheries and Animal Husbandry Department vide Appendix-1. However this boundary was initially proposed to protect the Gharials and their habitat i.e. Mahanadi Gorge Ecosystem and its catchment forests. Subsequently its wildlife potential was recognized and a flagship species conservation approach has been put forth, considering the ecological requirements of mega herbivores viz. Elephant and mega carnivore viz. Tiger. In keeping with this, the new boundary has been proposed in chapter 10. However, the present boundary of this Sanctuary has been notified keeping in view of ecological requirement of Gharials & Muggers.

As the sanctuary covers portions of four civil districts, there are difficulties in administrative and legal complications which arises in determining rights etc. for final notification under section 26-A of Wildlife (Protection) Act, 1972. Mainly because the district administrations of four districts view the portions of sanctuary in their jurisdiction in different perceptions. Moreover, the mighty river Mahanadi divides the sanctuary area in to a greater northern half and a lesser southern half, accessible respectively from Angul or Nayagarh and Boudha by road, necessitating management of the sanctuary by two administrations.

**External Boundary :**

The total length of Sanctuary boundary is 215.2 Kms. It runs along either on road, nalla, village boundary or RF boundary. Details of boundary length are as follow:

Along the Road	27.5 Kms.
Along the River / nalla	14.0 Kms.
Along the Village Boundary	63.9 Kms.
Along Reserved Forests	109.8 Kms
Total	215.2 Kms.

The boundary is not maintained for long time. In most of the cases pillars / cairns are either damaged or absent. It is also difficult to make out the boundary line, where it passes along the RF boundary line. In last two years,1440 RCC pillars have been posted along 120 Kms of the boundary of the sanctuary after surveying the same. Further survey, line clearance and pillar postings are required to complete the balance 95.2 Kms.

**Internal boundary :**

Length of Northern bank of river Mahanadi within the sanctuary is 33.75 Kms and that of southern bank is 36.25 Kms. Total length of RF and other forest boundary is 169.4 Kms out of which, natural boundary is 18.58 Kms and artificial boundary is 150.82 Kms and a common boundary of 147.5 Kms. Length of village boundary within the sanctuary is 322 Kms. Internal boundary line is lying un maintained.

The length of R.F. & DPF boundary length have been given in **(Appendix-5)**.

## **ECOLOGICAL BOUNDARY :**

The ecological boundary of the wild animals is quite different from the administrative boundary. In case of elephant, it is a vast area comprising of boundaries of several divisions. Ecological boundary of the wild animals of this sanctuary includes the forests of Athgarh, Athmallik, Angul, Nayagarh and Boudh Forest Divisions.

Mahanadi Elephant Reserve, consisting of forests along with other areas of 9 forest Divisions viz. Satkosia, Mahanadi, Boudha, Nayagarh, Athgarh, Athamallik, Dhenkanal, Angul and Cuttack, over an area of 8036.32 sq km. is the Ecological boundary for the elephants of the sanctuary. But the ecological boundary of all other animals, including tiger, is restricted to the buffer zone of the sanctuary, the boundary of which is described as bellow:

## **BOUNDARY DESCRIPTION OF BUFFER ZONE**

The outer boundary of the buffer zone starts from the meeting point of Suhagi nalla and the river Mahanadi in Cutack District. From that point moves in a north ward direction till it meets Maradamukha village boundary. Then it runs along the southern & eastern boundary of that village till it reaches the boundary of Sisupathar P.F. Then it follows the southern boundary of Sisupathar P.F. in a north-east direction till it meets Balikiary RF. From then it follows the southern boundary of Balikiary RF, Nuagarh R.F. till it meets the inter-district boundary of Cuttack and Dhenkanal, running in a northwesterly direction from there along the Northern boundary of Nandinia R.F. of Dhenkanal District, northern boundary of Nuakheta R.F. of Angul District it meets Nukheta Revenue Village. Then it follows the northern boundary of Nuakheta Revenue village, after meeting Balang R.F, it runs along the northern boundary of Balang R.F. in a westward direction. Then following the northern boundary of Bhogapal R.F., northern boundary of Hidisinga Revenue village, it follows the northern boundary of Krushnachakra R.F. There after it follows the northern boundary of Kulsar Revenue village, northern boundary of Krushnachakra R.F. till it meets the

eastern boundary of Tabada R.F. Then it follows the southern boundary of Tabada R.F. in a northwesterly direction till it meets the sub-division boundary of Athamallik Sub-Division. Running along the sub-Division boundary on a southwesterly direction, it meets Hatidhara R.F. boundary of Athamallik Division. Then it follows the northern, western and southern boundary of Hatidhara R.F. till it meets the Chanagudi nalla.

From there it follows the western boundary of the sanctuary and the southern boundary of sanctuary, till it meets the inter-district boundary of Boudh and Nayagarh District. Then it follows the northern and eastern boundary of Baisipalli R.F. till it touches the road between Badasilinga to Makarprasad where it runs easternly along the southern boundary of Makarprasad R.F. up to Champadali village. From there it follows the Brutang nalla on a easternly direction till it meets river Mahanadi where it crosses the river Mahanadi to reach the starting point at Odasinga nalla.

## **2.2. Geology, Rock and Soil :**

The rocks of southern tract, where bulk of the forests of the sanctuary occur are of eastern ghat group of Archean age. The main rocks are gneiss, quartz schist, Khondalite, Charnokites and Granite. Towards Tulka and Raigoda, Ferruginous quartz, Mica schist occur with Quartzite gneiss, Granite Gneiss which extends up to Katrang. In Raigoda, Bolong and Jocub area, Khondalite is commonly met with, yielding very good quality of sandy loam and it is usually associated with pure sal crop, some times found on hill top, as in Jocub.

Kankar formation of Nodular limestone, which produces heavy impermeable clay are also met with in Majhipara and to a less extent in Tikarpara, Katrang, and in north-west area of Baghmunda blocks. This formation bears poor crops. This is not met with in other areas. Alluvial soil of lesser extent are met with on the banks of nalas and rivers.



**Soil Erosion :**

Soil erosion is not a perceptible feature in sanctuary. But felling that has taken place in past years during commercial exploitation as per working plan prescriptions and indiscriminate illicit felling, has caused soil erosion to some extent. Due to steep hill slopes and undulating ground on the plains, the drainage systems have not only removed the top soil rendering the soil infertile but also cut up the grounds badly year after year forming gullies.

**2.3. Terrain :**

The extensive forests of Pampasar and Purunakote Ranges, comprising of vast tract of high hills, steep to very steep slopes and deep valleys extend from Athmallik in west to Narsinghpur and Hindol (Athgarh Sub-Division of Cuttack district and Hindol Sub-Division of Dhenkanal district respectively) to the east. The ranges of hills lie approximately parallel to Mahanadi valley having a south-east north-west strike. The slopes of the hills are generally very steep more especially in the forest lying east of Angul – Tikarpara road. In west of this road i.e. in Baghmunda and Majhipara blocks, slopes are more moderate and the valleys more open. In the East i.e. on Jocab, Bolong of Pampasar Range, Tulka of Purunakote range and Raigoda blocks of newly created Raigoda range, the slopes are very steep and occasionally precipitous, while the valleys are usually deep and narrow forming rocky ravines in many places.

On southern side near Satkosia Gorge, the precipitous high hills descend north-ward to the bank of river Mahanadi leaving little or no room for agriculture except for two tiny patches of cultivation at Sitalpani and Marda.

The elevation varies from 37 mtr. to 932 meters. The lowest point is 37 mtr above MSL on the bank of river Mahanadi in Katrang RF and two highest peaks are Sunakhania (932 mtr) in Padmatola RF and (842 mtr.) in Jocab RF separately.

## **2.4- Climate :**

### **General Climate :**

Three distinct seasons are experienced in the sanctuary area. The winter starts from November and lasts till middle of February when summer starts and it continues up to middle of June. This is followed by rainy season which continues up to September. The month of October and first half of November may be treated as post-monsoon season when some rains are occasionally experienced.

### **2.4.1. Rainfall pattern, Distribution and Flood :**

The bulk of precipitation occurs during the rainy season through south-west monsoon. Usually monsoon breaks in the third week of June and continues up to middle or end of September. Pre-monsoon showers are also experienced in first or second week of June, but not very common. Post monsoon showers are also experienced in month of October and November. Thunder storm usually occurs during April and May. The average number of rainy days in a year is 100 out of which, 70 are confined to the period between June to September. The annual average rainfall varies from 1250 mm to 1700 mm.

High floods are not common in Angul. Flood occurred in river Mahanadi during 1934 and 1940 when water level rose up to Hatibari village, 5 kms from Tikarpara ghat and it caused tremendous loss of cultivation in under low lying areas. Flood also occurred during 1955 and crossed all the previous record. In the flood which occurred during 1982, 1986 and 2003, water level of river Mahanadi rose up to the road leading to erstwhile GRACU (Gharial Research & Conservation Unit)

Centre below the Forest Rest House and caused enormous damages to crocodile enclosures too. Artificial flood is also experienced when Hirakud Dam Authority opens their Sluice gates to discharge excess water of the dam during rainy season.

Rainfall in m.m. at Tikarapada

<b>Month</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
<b>Jan</b>	12.8	15.0	-
<b>Feb</b>	18.8	1.0	-
<b>Mar</b>	1.8	33.6	21.6
<b>Apr</b>	85.0	16.4	9.9
<b>May</b>	48.0	32.8	35.6
<b>June</b>	150.6	170.0	106.2
<b>July</b>	423.8	628.2	224.1
<b>Aug</b>	120.2	480.4	597.1
<b>Sept</b>	132.4	440.6	180.6
<b>Oct</b>	130.0	242.9	11.8
<b>Nov</b>	0	1.0	11.4
<b>Dec</b>	0	0	-
Total	1123.4	2061.9	1198.3

Data have been collected from Central Water Commission, Tikarapada.

**2.4.2. Temperature; a summary of year round pattern:**

The advent of summer is usually experienced from March when temperature starts rising. Summer months are very hot. Maximum day temperature varies from 45°C to 47°C in month of May and June. It went upto 49°C during May 2005. with the onset of monsoon, temperature drops appreciably. When monsoon withdraws in the month of October, the temperature remains the same as in previous month, but nights become cooler. Gradually bothday and night temperatures fall. The coolest month is December when temperature in night varies between 6°C to 11°C.

In the interior places of sanctuary like Raigoda, Labangi, Tulka, Tikarpara, Purunakote, there still exists dense forests and these places are comparatively cooler. Temperature at Raigoda is appreciably lower comparative to other areas, but no records are available.

<b>AVERAGE ANNUAL TEMPERATURE IN ANGUL DISTRICT</b>														
<b>Month</b>	<b>1989</b>		<b>1990</b>		<b>1991</b>		<b>1992</b>		<b>1993</b>		<b>1994</b>		<b>1995</b>	
	<b>Max</b>	<b>Min</b>	<b>Max</b>	<b>Min</b>	<b>Max</b>	<b>Min</b>	<b>Max</b>	<b>Min</b>	<b>Max</b>	<b>Min</b>	<b>Max</b>	<b>Min</b>	<b>Max</b>	<b>Min</b>
<b>Jan</b>	28.6	13.2	30.4	11.3	30.9	14.4	32.2	9.2	30.4	11.1	30.8	12.6	25.9	15.8
<b>Feb</b>	29.2	7.6	29.8	17.6	33.1	11.2	30.8	9.4	32.2	16.4	30.5	15.3	31.9	18.6
<b>Mar</b>	39.4	19.2	40.7	17.4	38.6	18.3	40.1	23.4	38.3	16.2	38.9	19.9	35.6	21.7
<b>Apr</b>	38.8	22.3	40.3	19.5	40.7	14.4	39.6	21.2	38.4	17.1	38.5	22.3	39.2	23.4
<b>May</b>	40.3	20.2	41.4	18.9	40.7	23.8	42.2	26.4	40.2	22.1	40.2	24.3	36.4	23.8
<b>June</b>	34.8	15.4	36.3	22.2	33.4	19.2	37.8	21.2	40.4	21.2	33.8	22.8	36.8	24.1
<b>July</b>	31.2	23.2	29.6	20.2	30.4	21.6	32.3	24.4	30.4	21.2	30.8	22.1	32.5	22.3
<b>Aug</b>	33.4	22.3	33.1	19.6	30.2	23.2	34.4	24.6	32.2	20.6	30.8	21.7	32.5	22
<b>Sept</b>	32.2	21.2	30.1	18.4	33.4	24.2	29.6	21.2	30.3	18.4	32.8	21.5	32.5	21.5
<b>Oct</b>	33.4	12.2	33.2	20.1	31.4	18.6	33.1	19.2	30.4	14.2	33.1	19.1	31.7	19.2
<b>Nov</b>	30.3	13.2	31.1	18.6	32.4	22.2	30.6	15.4	29.4	12.2	30.7	16.7	29.6	16.1
<b>Dec</b>	28.4	11	29.2	14.4	30.1	16.2	29.2	12.6	29.3	11.1	28.5	14.3	29.8	14.9
<b>Month</b>	<b>1996</b>		<b>1997</b>		<b>1998</b>		<b>1999</b>		<b>2000</b>		<b>2001</b>			
	<b>Max</b>	<b>Min</b>	<b>Max</b>	<b>Min</b>	<b>Max</b>	<b>Min</b>	<b>Max</b>	<b>Min</b>	<b>Max</b>	<b>Min</b>	<b>Max</b>	<b>Min</b>		
<b>Jan</b>	29.2	19.5	31.1	18	31.3	11.8	33.1	8.5	34.1	16.6	35.5	9.2		
<b>Feb</b>	32.3	20.5	36.5	18.6	36.1	12.8	39.5	14	36.7	20.2	38.1	11.2		
<b>Mar</b>	37.8	13.1	40.1	NA	38.7	15	22.5	15.6	38.9	11.2	41.7	16.6		
<b>Apr</b>	39.8	10.6	41.1	NA	41.7	21.2	46.1	21	43.3	23.1	45.1	19.6		
<b>May</b>	41.6	12.5	43	NA	46.7	21.8	45.7	20	42.9	21.8	45.5	20.6		
<b>June</b>	34.9	12.9	43.1	NA	46.7	22.6	40.7	22.4	38	26	39.2	21.4		

<b>July</b>	32.1	13.4	29.5	NA	36.9	23	36.7	20.4	31	25	34.7	20.2
<b>Aug</b>	31.7	12.7	43.7	15.6	35.1	23.6	35.3	21.6	33	24	33.5	22.4
<b>Sept</b>	34.2	13.2	29.1	23.6	35.9	21.8	35.1	21.2	33	24	34	25
<b>Oct</b>	33.2	10.1	34.9	20	35.5	20.6	35.1	20	34	23	35.1	19.8
<b>Nov</b>	31.9	5.5	35.1	19	34.1	13	33.7	14	32	17	35.1	15.4
<b>Dec</b>	28.1	<b>6.7</b>	30.3	14.6	32.1	9.8	30.1	12	28	10	30.9	10

Month	2002		2003		2004		2005		2006	
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
<b>Jan</b>	28	12	31.2	13.3	27	11.5	29	11	26.48	14.40
<b>Feb</b>	32	16	33.2	16.4	23.5	16	36	14	32.10	14.30
<b>Mar</b>	40.4	18.2	41.6	18.2	37	20.5	42	21	35.79	22.58
<b>Apr</b>	39	26	43.7	24.7	43	27.5	45	24.5	42.08	27.71
<b>May</b>	42	27	44.6	22.4	43	29.5	<b>49</b>	25	40.14	28.08
<b>June</b>	39	26	42.8	26.4	40	29	47.5	25	36.33	27.78
<b>July</b>	35	26	36.6	25.6	36	26.5	38	25	32.54	26.03
<b>Aug</b>	33	25	32.2	21.1	35	24	37	24	29.91	25.37
<b>Sept</b>	34	24	35.2	22.2	35.5	27	37	24.5	30.63	25.56
<b>Oct</b>	33.9	22.4	34.6	23.3	33	21	30	15	30.80	23.96
<b>Nov</b>	33	20.6	34.4	19.6	30	14	30	14	27.75	20.03
<b>Dec</b>	29.8	9.6	30.4	11	29	11	29	11	18.19	15.90

Data for 2004 to 2006 have been collected from Central Water Commission, Tikarapada.

Lowest temperature 11° C has been recorded on 28<sup>th</sup> January,2006

Highest temperature 44° C has been recorded on 1<sup>st</sup>. May,2006

### 2.4.3. Humidity; a summary of year round pattern :

The humidity is generally high in the sanctuary. Maximum humidity is seen in the month of October and minimum in April and May. It generally crosses 80 percent in August, September, and October, in other months it varies between 75 – 77%. But the humidity reduces towards March, April, and May and is minimum in April and May. The details are given in Table.

AVERAGE RELATIVE HUMIDITY OF ANGUL DISTRICT												
Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
1994	85	82	73	66	73	79	82	82	81	87	78	88
1995	73	80	52	49	70	71	77	81	78	81	73	66
1996	84	66	63	67	68	75	77	78	76	78	70	75
1997	64	82	<b>41</b>	46	58	68	72	82	74	77	62	58
1998	85	56	90	88	72	72	78	77	88	<b>89</b>	85	74
1999	76	81	71	68	68	71	81	84	80	79	73	74
2000	76	72	80	77	71	78	82	82	81	79	88	78
2001	77	86	82	78	69	73	86	83	81	82	78	73
2002	83	85	78	74	69	74	81	83	84	83	86	84
2003	81	85	79	81	78	81	83	84	80	86	84	83
<b>AVG.</b>	78	78	71	<b>69</b>	<b>70</b>	74.2	79.9	<b>82</b>	<b>80</b>	<b>82</b>	78	75
Source: Directorate of Meteorology, Bhubaneswar												

### 2.4.4. Wind speed- a summary of year round pattern :

No data is available on this score. Normally during the month of April to May, thunderstorm followed by high velocity wind is experienced. It causes uprooting of trees, breaking of branches, sweeping away of roofs of asbestos, thatched houses resulting in loss of lives and properties.

#### 2.4.5. Drought and its periodicity :

Drought in Angul District is quite common due to inadequate and badly distributed rains. Drought is the main natural calamity which causes failure of agricultural crops. Drought affects growth of forest species too. Less survival percentage is noticed in respect of plantations raised in drought year. Drought also creates the problem of unemployment of villagers residing in an around the sanctuary area, who in turn resort to illicit felling for their livelihood. The poor economic condition is compounded as there is absolutely no irrigation facility.

Some of the years in which severe drought was experienced in past are given below along with loss of agricultural crop:

<b>Year</b>	<b>Approx. loss of agricultural production in % of total land under cultivation.</b>
1887-88	63 %
1888-89	50 %
1897	50 %
1908-09	50 %
1918-19	50 %
1954-55	60 %
1982-83	50 %
1987-88	50 %

**SOURCE :** Dhenkanal Gazetteer, 1981.

#### 2.5. Water sources :

The major river which drains water of the sanctuary is river Mahanadi, it flows on southern boundary of Satkosia Wildlife Division draining water of Purunakote, Pampasar, Jillinda, Kusanga and Chhamundia Ranges through its tributaries (nalas). Mahanadi separates both the Wildlife Divisions, viz. Satkosia

Wildlife Division and Mahanadi Wildlife Division comprising the Sanctuary. The tributaries slowly become dry after monsoon and fully dry in summer, except Halua nalla of Raigoda block. However, river Mahanadi and nalas like Brutanga, Chanagodi, Khalakhala, Suhagi carry some perennial water even in summer. The forests of the sanctuary provide catchments for these streams. Good drainage systems are provided by these rivers and no where any water logging is noticed. Drainage map of the sanctuary is enclosed .

The contributing factors for non availability of water in the nalas during summer can be categorized as follows:

- a) Less water holding capacity of soil due to peculiar geological condition.
- b) Rapid runoff of precipitated water from hill slopes during rainy season due to steep slopes.
- c) Insufficiency of water harvesting structures.
- d) Surface water level of River Mahanadi is very low compared to the topographic features.
- e) The soil formation in most of the areas is due to sedimentation, which do not holds water for long time.

To improve the supply of water, a large number of wells and tanks have been constructed but most of them dry up during summer. There is one huge reservoir at Sisoopathar in Jilinda Range and 24 water bodies in different R.Fs of the sanctuary, a list of which is given in Appendix-3 with their location.

## **2.6. Range of Wildlife, status, distribution and habitat :**

### **2.6.1. Vegetation :**

#### **2.6.1.1. The bio-geographic classification :**

According to Rodgers and Panwar (1988) biogeographic classification, Satkosia Gorge Sanctuary forms the meeting point of two biotic provinces of



*Deccan Peninsula biogeographic Zones*(6). The area North of Mahanadi is classed under *Garhjat hills* and that of South under Eastern Ghats. This sanctuary is in fact the meeting point of *Chhotnagpur plateau* (6B) and *Eastern Ghats* (6C) biotic Provinces. Ecologically, the vegetation of Satkosia largely conforms to Northern tropical moist deciduous forests and Moist Peninsular low level sal. However, five different plant associations are discernible including the dry type. More than 400 species of plants have been recorded here.

There are vast number of lower plants occur in the sanctuary seasonally. These plants are prominent in the wet season. The cryptogams of Nostac, and other micro organisms are prevalent in the nallas where stagnant water is accumulating. In certain areas Bryophytes, Pteridophytes and Gymnosperms are very common. In Bryophytes Riccia, Cyathidium and general liver worts are very common. In pteridophytes are ferns of different genera are seen in the sanctuary in the villagers. In Gymnosperms cycas *cerinalis* ver. *Orixensis* is very prevalent throughout the sanctuary. In addition to this the smallest angiosperm plant like *wolfia* and *camera* are seen in Kantrasingha game tank. Thus the sanctuary comprises the vast biodiversity stratification.

#### **2.6.1.2. The forest types, cover and food for wild animals :**

According to Champion & Seth in their Revised Survey of Forest types in India ,(1962), the forests of the sanctuary can be divided in to the following types and sub-types.

Sub-group – 3C – North Indian Moist Deciduous Forests- 3C/C2e(ii)- Moist Peninsular Low level Sal.

Subgroup-5B-Northern Tropical Dry Deciduous Forests.

- (i) 5B/C 1c Dry Peninsular Sal bearing forests.
- (ii) 5B/C2 Northern Dry Mixed Deciduous Forests.
- (iii) 5/DS1 Dry Deciduous & Scrub forest.
- (iv) 5/E9 Dry Bamboo brakes Seral types.
- (v) 5/S1-Dry Tropical riverain forests.

The details of each types and sub-types are described below:

### **Moist Peninsular Low level Sal-3C/C2e(ii) :**

The moist sal is viewed as a climax (climatic, edaphic, bio-edaphic) formation throughout and in some forms which might be considered seral types have also been included in the climax type as they are sufficiently stable under prevailing conditions of management.

### **Distribution :**

This subtype of forests is seen in the Reserved Forest of Raigoda, Bolong, Jocab, Tulka, Takarsingha, Purunakote, Chhotmunda, Tainsi, Kuru and Baghamunda blocks of the Satkosia Wildlife Division along with adjoining Protected Forests of Purunakote.

### **Floristic composition :**

Floristic composition changes in different site and frequency of the species also varies. However to describe the composition, area covered under this forest sub-type has been divided in to two categories namely, (a) valley areas; where moisture retention capacity of soil is better, humus is more and area is comparatively cooler; (b) other areas consisting of slopes and plains, which is comparatively drier. In these two categories too; the frequency of species varies, however average crop composition of these two categories are described below:

#### **a) In the valley areas :**

- I. Shorea robusta, Dillenia pentagyna, Bridelia squamosa, Terminalia alata, Terminalia arjuna, Syzygium cuminii, Adina cordifolia, Mitragyna parviflora, Lagerstroemia parviflora, Mangifera indica, Bursera serrata, Pterocarpus marsupium, Terminalia bellerica, Anthocephalus cadamba, Bombax ceiba, Gmelina arborea, Garuga piñnata.

- II. *Syzygium cuminii*, *Milusa velutina*, *Polyalthia cerasioides*,  
*Lanea coromandelica*, *Pterospermum xylocarpum*, *Macaranga*  
*peltata*, *Diospyrus Montana*, *Derris indica*, *Mallotus philippensis*,  
*Careya arborea*, *Glochidion lanceolarium*.
  - IIa. *Bambusa arundinacea*.
  - III. *Ardisia solanacea*, *Grewia helicterifolia*, *Flemingia chapper*,  
*Flemingia strobilifera*, *Cycas circinalis*, *Leea asiatica*, *Cipadessa*  
*baccifera*, *Strobilanthes scaber*, *Helicteres ixora*, *Clerodendrum*  
*viscosum*, *Woodfordia fruticosa*.
  - IV. *Thysanolaena maxima*, *Panicum species*.
  - V. *Bauhinia vahlii*, *Combretum decandrum*, *Butea monosporma*,  
*Zizyphus oenoplia*, *Millettia extensa*, *Acacia torta*, *Entada*  
*phoseoloides*, *Smilax zeylanica*, *Dioscoria species*.
- b) **In other areas :**
- I. *Shorea robusta*, *Terminalia alata*, *Terminalia Chebula*, *Adina*  
*cordifolia*, *Mitragyna parviflora*, *Lagerstroemia parviflora*,  
*Anogeissus latifolia*, *Bridelia squamosa*, *Albizia procera*, *Albizia*  
*lebbeck*, *Hymenodictyon excelsum*, *Pterocarpus marsupium*,  
*Bombax ceiba*, *Gmelina arborea*, *Dalbergia paniculata*,  
*Schleichera oleosa*, *Madhuca indica*, *Lanea coromandelica*,  
*Diospyrus melanoxylon*, *Sterculia urens*.
  - II. *Cleistanthus collinus*, *Dalbergia latifolia*, *Ougenia oogenensis*,  
*Syzygium cuminii*, *Dillenia pentagyna*, *Careya arborea*,  
*Diospyrus species*, *Mallotus philippensis*, *Wendlandia heynei*.
  - IIa. *Dendrocalamus strictus*.
  - III. *Cipadessa baccifera*, *Woodfordia fruticosa*, *Clerodendrum*  
*viscosum*, *Zizyphus oenoplia*, *Indigofera pulchela*.

- IV. Thysanolaena maxima, Panicum species, Eulaliopsis binnata.
- V. Bauhinia vahlii, Millettia extensa, Combretum decandrum, Butea monosperma, Acacia torta, Zizyphus

oenoplia, Entada phaseoloides, Smilax zeylanica, Dioscorea species.

No specific survey has been carried out to find frequency of grasses in different site of this forest subtype. However a list of grasses which generally get associated with this forest type are furnished below :

#### **Perennial grasses**

Aristida setacea, Bothriochloa pertusa ,B.bladhii ,Cymbopogon martini, Chrysopogon gryllus, Chrysopogon gryllus C.montanus, Dicanthium annulatum ,Dicanthium annulatum, D.Carricosum ,Eragrostic coarctata, Eulaliopsis binata, Iseilema prostratum, Imperata cylindrical, Ichaemum rugosum Panicum species, Pseudosorghum fasciculare, Sporobolus indicus, Cyndon dactylon,, Heteropogon contortus, Thysanolaena maxima Themeda triendra, Arundinella khasiana, A.Setosa, Sachharum spontaneum

#### **Annual grasses**

Arthraxon species, Arundinella pumila Eragrostis unioloides,E.viscosa Setaria glauca, Rottboellia, cochinehensis, Themeda quadrivalvis, Dimeria species, Eulaliopsis species

#### **Herbs**

Desmodium species, D.Latifolium ,Triumfettarhomboidea

## **5B/C1c Dry Peninsular Sal bearing forests :**

### **Distribution :**

This subtype is fairly distributed in this sanctuary. It is seen in the R.F. blocks of Majhipara, Tikarpara, Katarang & P.F. blocks of Tikarpara and Katrang.

### **Floristic Composition :**

This subtype contains a vast number of species many of which are of little importance. Composition starting from important species is furnished below:

- I. Shorea robusta, Terminalia alata, Bridelia squamosa, Pterocarpus marsupium, Anogeissus latifolia, Schleicheria oleosa, Lagerstroemia parviflora, Albizia species, Adina cordifolia, Mitrgyna parvifolia, Terminalia bellerica, T.Chebula, Madhuca indica, Acacia catechu, Buchanania lanzan, Lannea coromandelica, Boswellia serrata, Dalbergia paniculata, Ougenia oogenenses, Dalbergia latifolia, Gmelina arborea, Syzigium cuminii, Terminalia arjuna, Stereospermum chelonoides, Bombax ceiba, Dillenia pentagyna, Dyospyrus melanoxyton.
- II. Cleistanthus collinus, Chloroxylon swietenia, Emblica officinalis, Cassia fistula, Aegle marmelos, Wendlandia tinctoria, Gardenia species, Symplocos racemosa, Morinda tinctoria, Cochlospermum religiosum.
- Iia. Hollarrhena antidysentrica, Ixora arborea, Woodfordia fruticosa, Antidesma acidum, Aristida setacea, Indigofera pulchella, Phoenix ecaulis.
- III. Eulaliopsis binata, Themeda species, Heteropogan contortus, Cynodon dactylon.
- IV. Combretum roxburghii, Butea superba, Smilax species, Zizyphus oenoplia, Bauhinia vahlii.

## **B/C2-Northern Dry Mixed Deciduous Forests:**

### **Distribution :**

The forests in Tainsi R.F. block comes under this forest type.

### **Floristic Composition :**

- I. *Anogeissus latifolia*, *Lagerstroemia parviflora*, *Haldina cordifolia*, *Terminalia alata*, *Mitrgyna parvifolia*, *Dalbergia latifolia*, *Hymenodictyon excelsum*, *Bridelia squamosa*, *Albizia species*, *Bombax ceiba*, *Shorea robusta* (less than 5%), *Pterocarpus marsupium*, *Dalbergia paniculata*, *Lannea coromandelica*, *Dyospyrus melanoxylon*, *Diospyrus species*, *Cleistanthus collinus*, *Melia composite*, *Terminalia bellerica*, *Stereospermum chelonoides*, *Bursera serrata*, *Boswellia serrata*, *Acacia leucopholea*.
- II. *Ougenia oogenensis*, *Cassia fistula*, *Alangium lamarkii*, *Careya arborea*, *Hollarrhena antidysentrica*, *Casearia elliptica*, *Mallotus phillippensis*, *Catunargegam mutans*, *Limonia acidissima*, *Acacia leucophloea*, *Zizyphus glaberrima*, *Chloroxylon swietenia*, *Gardenia latifolia*, *Gardenia gummifera* (It occurs sub-gregariously on many of the dried hills with clay soil derived from quart & zscist, H.H.haines), *Ixora arborea*.
- IIa. *Dendrocalamus strictus*.
- III. *Helicteres iora*, *Strobilanthes species*, *Woodfordia fruticosa*, *Indigofera cassiodes*, *Cipadessa baccifera*.
- IV. *Cymbopogon martini*, *Aristida setacea*, *Eulaliopsis binnata*.
- V. *Combretum decandrum*, *Zizyphus oenoplia*, *Butea monnosperma*, *Butea parviflora*, *Milletia extensa*, *Smilax species*, *Grewia tiliaefolia*.

### **Seral types 5/S1-Dry Tropical Riverain Forests :**

Immature soil on the bank of larger nallahs or river which is in the process of development supports forest of this type. The occurrence of Sahada trees and Phasi (*Anogeissus acumminata*) on bank of nallahs and occurrence of Phasi and Kuchila trees on bank of river Mahanadi represent seral stage ecologically. These areas may be taken as a secondary succession as constant erosion and re-deposition of soil is a regular feature associated with this subtype.

Satkosia Gorge Sanctuary is one of the best habitats for Elephants, Tigers, Sambar, Barking Deer, Gaur etc. The riparian vegetation provides excellent habitat condition for Giant Squirrels. Abundance of Nux Vomica trees provide good food for horn bills. The different forest types provide required cover for all types of wild animals. The list of plants with their vernacular and scientific names are given in (**Appendix-6**).

#### **2.6.1.3 Species and communities of conservation importance; key areas :**

One of the key areas of conservation is the riparian vegetation . Riparian areas in Satkosia are many. Their number have not been enumerated. It is first and foremost responsibility to identify such key areas with reference to latitude and longitude taken by GPS. One such area has been located in compartment no.7 of Tikarpara RF having longitude 84 ° 48.963' E and latitude 20° 25.297' N which is the origin place of Ramagaon nalla. The important plant species available there are Mankada kendu (*Diospyros embryopteris*), Karanja (*Pongamia pinnata*), Jamun (*Syzygium cuminii*), Arjuna (*Terminalia arjuna*). This area is totally undisturbed. All types of animals use this area very often. The species living in riparian forest is giant squirrel. The Hinjal trees (*Barringtonia acutangula*), Phasi tree (*Anogeissus acumminata*), Arjun (*Terminalia arjuna*) and Kochila (*Strychnus noxvomica*) are found endemic to the Mahanadi river bank and they are of great conservation value. The Malabar pied hornbill likes kochila fruits very much. Hence all riparian fringe forest must be protected as they often serve as crucial

corridor link for migration of elephant herds due to presence of perennial water source.

Piasal (*Pterocarpus marsupium*) is localized in Baghamunda RF comp. no. 5,9,12,13. Similarly Pahadi sissou (*Dalbergia latifolia*) and Bandhan (*Oogenia oogenensis*) are seen in Mahanadi RF comp. no. 1 & 2, near Dhipisahi. A patch of *Dalbergia latifolia* is seen in between Rasanda and Kuadoli area of Raigoda range. Sal (*Shorea robusta*) patches are localized to Raigoda Forest and in Mahanadi RF comp. 17. Raigoda sal is of best quality.

All existing mesic sites with little grass land have to be conserved by appropriate habitat manipulation as the herbivores often congregate.

The list of threatened plant species are given below which requires protection.

1.	Hinjal -	<i>Barringtonia acutangula</i> .
2.	Kochila -	<i>Strychnos nuxvomica</i> .
3.	Rosewood / Pahadi Sissoo -	<i>Dalbergia latifolia</i> .
4.	Patala garuda -	<i>Raulfia serpentina</i> .
5.	Gila -	<i>Entada phaseoloides</i> .
6.	Mirigichara -	<i>Grewia elastica</i> .
7.	Kangada -	<i>Xylia xylocarpa</i> .
8.	Patuli -	<i>Sterespermum chelonoides</i> .
9.	Sami / Kanta china -	<i>Acacia fennugimea</i> .

### Unique habitats :

A large number of caves, rocks, crevices, shelves, over hangs are existing inside the sanctuary. Some of these such unique habitats are located in compartment no.7, Tikarpara RF having longitude 84 ° 49.041' E and latitude 20° 35.245' N, second in compartment no.10 of Tainsi RF on Transect line 24 having longitude 84 ° 51' E and latitude 20° 42' N, third in Baigani pahad in Jorum R.F.



20° 30' 47.6" N, 84° 53' 4.8"E. Fourth place is in Katrang Chunaghathi chhak area along the forest road with Latitude 20° 34' 58.4" N, long 84° 52' 15.8 ", Alti 183 mtre . These areas are being used by the porcupines. Again the following caves/dens are noticed in this sanctuary:

Jhinkadari in Baghmunda Compt. No. 5, Satkunjia in Baghmunda Compt. No. 6, Badakheta in Baghmunda Compt. No. 2, Karadabani in Baghmunda Compt. No. 11, Places in Purunakote Compt. No. 4 & 5, Khusara pahad, Jhinkadara, Dabakhhol, Sissoo khol in Raigoda Compartment No.12 in Bhukundi Beat, Hatikunda khola in Tulka Compt. No.7, Places in Raigoda R.F. Compartment No.1,2,8,9,10,11,12,13, Places in Katrang Compt.No.5 and 7.

### **GRASS LAND:**

Following meadows of small area have been noticed in this sanctuary, viz. Karadabani in Baghmunda Compt. No.11, Andeikunjia in Baghmunda Compt. No.6, Karadabani in Baghmunda Compt. No.8, Khalikani in Katranga Compt.No.3, Rangamatia in Katrang compt.No.2, Kadua mada in Katranga Compt.No. 3, Chadheikhola in Katrang Beat, In Tikarpada R.F. Compt.no.3 ,7, Asurakhola nala in Purunakote Compt.No. 11, In Chhotamunda Compt.No.3, In Kuru Compt. No. 5, Satidhara in Tulka Compt. No.9, Telibahal in Bolong Compt. No.12, Magunibhugra in Katrang Compt.No. 4 , 5

### **2.6.2. Animals:**

#### **2.6.2.1. Vertebrates, their status, distribution and habitats :**

##### **Habitat quality, quantity and key areas :**

There are carnivorous animals such as Tigers, Leopard, Jungle cat, Civet, Small Indian mongoose, Wolf, Jackal, Stripped Hyaena, Wild dog found in Purunakote, Tikarapada, Pampasar, Raigoda, Jillinda and Chhamundia and Kusanga Ranges of the sanctuary.

There are herbivorous animals such as Elephants, common Langur, Sloth bear, Sambar, Chital, Chausingha, Mouse deer, Barking deer, Wild pig, Gaur (Gayal), Fruit bats, rodents like Malabar Giant squirrels, Five striped palm squirrel, Common hare and Percupines in the sanctuary. Nilgai was noticed some years back in Satkosia Wildlife Division. But Nilgai locally called Ghudian are seen in Mahanadi RF Comp. No. 15 & 16 of Mahanadi WL Division.

**Chousingha are seen in compartment No.17 of Majhipada ,R.F., Compartment No. 4 of Raigoda R.F. & Compartment No. 11 of Tulka R.F in the Sanctuary. Sighting locations are indicated in the map.**

The locality like Labangi, Tulka and Raigoda are very congenial for wild animals. All the above animals are sighted frequently in these areas. Elephant play grounds are Raigoda, Kuadoli, Halua nalla, Nandini nalla, Hatigirija, Tulka, Baghmunda, Katranga, Purunakote, Chhotmunda, Kuru, Labangi, Karadapada, Majhipara blocks of the sanctuary. Quite a number of animals are noticed in the forest of Purunakote, Raigoda, Tikarapada and Pampar Ranges. Many animals are sighted in game tank areas like Kantarsingha, Hatigirija, Kandhaida, Kadalikhola, Takarsingha, Buchhundabhogra, Nadapathar, Ranibandha, Paintiri, Khajurinallia and on forest roads passing from one side of the forests to the other. List of mammals with their sighting locations in Satkosia Gorge Sanctuary is given in (**Appendix-7**).

Crocodiles (both Gharial and Mugger) are found in Satkosia Gorge of river Mahanadi. Threatened species of the area are Crocodiles, Tiger, Elephant and Chousingha. Tiger population during 1979 was 26, it reduced during 1984 to 22. During 2004 it came down to 17.

Elephant population during 1979 was 133, it reduced during 1988 to 118, during 2005 only 98 elephants were noticed in the sanctuary but in the last census of 2007,195 elephants were counted showing an upward trend. Leopard population

during 1984 was 15 and during 2004 it was 34. Total 801 Gharials and 295 Muggers of different sizes have been released in Mahanadi river from 1975 to 2001. During the census of 2006, 2 nos. of Gharials and 68 nos. of Muggers were noticed in river Mahanadi. In rainy season during high flood, it is seen that only Muggers escape from river Mahanadi to important nalas for their survival while Gharials are unable to adopt this. They are swept away by high flood and die out resulting in decline of their number. This is corroborated from the fact that Gharials are rescued from Kendrapara areas. 6 Muggers are seen in village ponds of Jamudoli, Beherasahi and in Kadalikhola game tank. It is observed that Muggers move along nalas in opposite direction of water flow up to certain distance during rainy season and survive from high flood.

Wild animals are well distributed in the sanctuary but concentration of wild animals in certain sheltered or favoured pockets are there also. These pockets are forests near Kuadoli khol, Raigoda, Tulka, Purunakote, Tikarpara, Kuru, Tainsi, Baghmunda, Majhipara and Chhotmunda forest blocks. In Raigoda and Tulka more concentration of Elephant and Indian Bison population is observed. Deer population appears more in comparatively level areas of Kuru, Baghmunda, Tainsi, Majhipara, Purunakote and Katrang than hilly areas of Raigoda, Tulka, Jokub and Bolong. Wildlife population is seen to be less abundant in forests of Nuakheta, Bolong, Krushnachakra, Burti, Kurudu, Antulia-Tabada and Katada blocks of Angul Forest Division which are adjacent to the Sanctuary area. The species wise habitat wise distributions of important species are furnished below:

**Elephant habitat zone-5:** Satkosia – Baisipali and adjoining areas have been taken in the elephant habitat zone-5. It lies between 20° 25' to 20° 50' N latitude and 84° 25' to 85° 25' E longitude. It comprises forest blocks of Tikarpara, Katranga, Purunakote, Tulka, Baghmunda, Tainsi, Chotamunda, Kuru,

Majhipada of Satkosia Wildlife Division and Krushnachakra under Angul Forest Division. Besides Baisipalli, Mahanadi, Padmatola Reserve Forests come under Nayagarh Division. The Reserve Forests like Balikiari, Deobhuin, Olab, Nuagarh come under Athagarh Forest Division. Hatidhara, Northern block and Teleipathar come under Athmallik Division. The forests of this zone are mainly dense mixed forest, dense sal and Teak forests etc. The slope of this area lies within gentle sloping (3-5%) to very steep sloping (35%) with a maximum elevation of 932 mtr. in Sunakhania.

#### **Satkosia-Khalasuni Corridor :**

Satkosia-Khalasuni corridor comes within Sambalpur and Angul districts. Elephants from Sastkosia and Baisipalli Wildlife sanctuary used to migrate to Khalasuni sanctuary via Hatidhara, Teleipathar and Northern forest blocks of Athmallik Forest Division and Hatidhara and Landakot forest blocks of Rairakhol Forest Division and vice versa. During the migration, the elephants turn to Rail Reserve Forest from Hatidhara Reserve Forest, because of plenty of water sources in Rail. During the summer, instead of proceeding further they return and proceed either to Satkosia or to Khalasuni sanctuary. This migrational route is disturbed due to National Highway 42 and due to lot of encroachment enroute. The important forests of this route are mainly dense sal, dense mixed forest, open sal forest and bamboo. The slope of this route varies from gentle sloping (3-5%) to moderately steep to steep sloping (15-35%) with maximum elevation of 971 m. at Teleipathar Reserve Forest of Athmallik Division.

#### **Athmallik-Chhendipada-Kamakshyanagar-South Keonjhar Corridor :**

The migration route of Athmallik-Chhendipada-Kamakshyanagar-South Keonjhar route lie within Angul, Dhenkanal and Keonjhar districts. The elephants migrate from Satkosia Wildlife sanctuary through Taleipathar Reserve Forest and

then Ghosar Reserve Forest via Himitira and finally reach Kalapat Reserve Forest of Keonjhar district through Anantapur Reserve Forests of Dhenkanal District. The migration route of this region is mainly composed of different forests like dense sal forest, open sal forest, dense mixed forest, open mixed forest, degraded / scrub bamboo forest etc. The slope of this region varies from gentle sloping (3-5%) to moderate sloping (10-15%).

### **South Keonjhar-Kapilas-Satkosia :**

This was the earlier migrational route between two largest elephant habitats of Orissa i.e. Similipal and Satkosia. In course of time this has been fragmented and it does not exist now. The migrational route covers the districts of Angul, Dhenkanal, Cuttack and Keonjhar. The elephants of south Keonjhar used to migrate to Kapilas via Sukinda forest by crossing over the river Brahmani. Earlier the elephants from Kapilas used to migrate to Chandaka and Satkosia through the forests of Athgarh Division. Elephants from Chandaka used to cross river Mahanadi near the hillock Sushasan to move to the forests of Athgarh Division and then migrate to either Kapilas or Satkosia. Such migration perhaps has ceased since long. The forests of this route are mainly dense sal forest, open sal forest, dense mixed forest and degraded / scrub forest. The slope percentage of this route varies from gentle sloping (3-5%) to moderate sloping (10-15%) with the maximum elevation of 750 mt. at Raigoda Reserve Forest.

#### **a) Preservation of habitat integrity:**

The Satkosia – Baisipalli and adjoining area with a contiguous forest area of over 1000 Sq. Km offers one of the best prospects for the long-term conservation of the elephant sub-population. Habitat continuity has to be maintained throughout this region. Any future land-use should ensure that corridors are available for the free movement of elephants.

## **b) Maintenance of habitat quality :**

Not only sufficient area be set apart for elephants, the quality of the habitat should also be maintained to optimum conditions. It is also important to maintain a diversity of habitat types. The following zones need special attention viz. riparian zone, dense mixed deciduous forest and bamboo forest. The water in river Mahanadi is the life line for the elephants of this area.

### **Birds :**

While water birds are noticed along the bank of river Mahanadi and around damp paddy fields near nallah, other birds are also seen in good number in the sanctuary. Among water birds mention may be made to Chakwa-Chakwi (Bramhiny duck), Cattle egret, Duck, Brown fish fowl. The Jungle Babbler, Bulbul, Blue jay, Common Hawk cuckoo, House crow, King crow or Black drongo, Dove, Lesser whistling teal, Titar, Peacock, Grey jungle fowl, Common Myna, Grey partridges, Common Peafowl, Jungle Myna, Golden oriole, Rose ringed Parakeets, Spotted dove, Grey Hornbill, Brahminy Kite, Pariah kite, Paradise fly catcher, Vulture, White backed vulture, Common Indian nightjar, Crow Pheasants are the other land birds noticed in this sanctuary.

Some birds like Parakeets, Myna are captured by local people using nylon ropes for sale. Poaching of birds is a menace to be dealt with strictly. List of birds of Satkosia Gorge Sanctuary is given in (**Appendix-8**).

### **Reptiles :**

The monitor lizard (Godhi), Chameleon are quite common in this sanctuary. Fresh water tortoise is seen in the water of river Mahanadi. The common snakes found in the sanctuary are Tampa (Naja Naja Kaouthia), Naga (Naja-Naja-Naja), Saw Scale riper (Echi Carinatus), Chandra boda (Viper russelli), Chiti – common krate (Bungarus caeruleus), Rana-Banded, Krait (Bungarus fasciatus), Pani Dhanda (Natrix piscator), Bamhuni (Nabix stolata), Dhamana (Ptyas musosus), Domundia (Eryx stolata), King cobra (Ophioptagus

Hannah). The snake Ajagara (Python molurus) is noticed in Baghmunda , Tikarapara and Katranga R.Fs.

Apart from the above reptiles, the important reptiles for which the sanctuary is famous are Gavialis gangeticus (Gharial or Thantia) and Crocodylus palustris (Mugger). Gharial is the sole member of family Gavialidae and only found in Indian sub-continent. Mugger is a member of family Crocodile. The habitat of these two crocodiles in Satkosia Gorge is ideal where these two species survive in perfect harmony. Until 1950 this habitat was having the best population in India. Their population became less later on and there were only 3 adult Gharials (Two 22' long and one 18" long), 4 Juvenile Gharials and some Muggars left during 1975 within the Gorge and 50 kms upstream of river Mahanadi in this sanctuary. Nesting sites of gharial are seen on the Mahanadi river bank at Jharjhari near to Binikei temple at its down stream is seen from March to April.

The factors responsible for their depletion may be shooting for the costly hides, use of gill nets for fishing, collecting eggs for consumption.

The need for conservation of the species in this habitat which is ideal for it is due to the following reasons; it had best population, deep flowing water through out the year, good sand banks for nesting and basking, excellent fishing reserve, short winter suitable for multiplication and less disturbance. Gharial Conservation Project started during 1974 at Tikarpara with the objective of future conservation of crocodiles and release of crocodile by artificial breeding. List of Reptiles noticed are given in (**Appendix-9**).

#### **Fish Population :**

The common fish of this sanctuary include Rohi, Bhakura, Pohala, Serana, Chitala, Phali, Balia, Magura, Jalanga, Seula, Chenga, Gadisa, Kau, Balligirada, Baunsapatia, Paabata, Singi, Kantia, Kerandi, Mahurali, Jallha, Kuchia etc. Fishing is quite common in Mahanadi. List of Fish is given in (**Appendix-10**).

### **Ambhibian :**

Arboreal frogs (Tree frogs) like *Hyla arborea* and *Rhacophorus maculatus* are seen near the Rasanda tank area of Raigoda range. Nesting is noticed during June, *i.e.* just before monsoon. Nests appear as whitish spongy wet mass on bottom of medium grasses on bank near to water line, on dead stumps inside water. They are also found on overhanging tree branches of Sinsapa (*Ficus sp.*) trees on the bank of the tank as whitish spongy cricket ball size masses resembling as fruiting bodies of the tree. These ball shaped nests fall directly on water beneath releasing the tadpoles in to water.

List is given in (**Appendix-11**).

### **2.6.2.2. Limiting factor :**

Scarcity of water during summer days is one of the limiting factors for all the wild animals. Non-availability of large grassland due to

invasion of (Eupatorium) *Chromolaena odoratum* is also a limiting factor for the herbivores like Chital. Strong water current and flood in river Mahanadi is a limiting factor for Gharial population. Other limiting factors are:

Fire – Forest fire mostly ground fire, is noticed in some areas of the sanctuary during the summer. It starts after 15<sup>th</sup> February and continue till the onset of monsoon. Fire leads to shortage of fodder and destruction of habitat.

- Grazing – Livestock population in the sanctuary far exceeds the threshold capacity. They exert tremendous pressure on forest and compete with the wild herbivores. Goat population is increasing day by day causing threat to browsers like Sambar, Barking deer and Chousingha.
- Weed – Weed like (Eupatorium) *Chromolaena odoratum* is encroaching upon the open grass land or open forest causing loss of forage to the herbivores.



**Threat :**

1. Illicit felling – Smugglers in groups enter in to the sanctuary, illicitly fell Teak and Sal trees causing destruction of habitat.
2. Poaching – Poaching of animals by trapping, netting, poisoning for meat, ivory, feather, hide are the biggest and most visible threat, though stringent measures have been taken to curtail the menace.
- 3..Fishing – The population of crocodiles is declining probably due to shortage of fish population, though there is controlled fishing in the river Mahanadi in the sanctuary.

**2.6.2.3. Important invertebrates, their status, distribution and habitat :**

Some terrestrial invertebrates gradually vanishing are Earthworms, Crickets, Termites, Snails etc. Their status is threatened due to increased use of chemical fertilizers, insecticides and pesticides in the agricultural field for better production. More-over the micro habitat are being lost due to increased human interference. Unless organic farming is stressed upon, these animals will soon disappear. Plenty of butterflies of various family are sighted in Rasanda, Kuadoli areas of the sanctuary. The detail list is given in (**Appendix-12**).

## CHAPTER – 3

### HISTORY OF MANAGEMENT AND PRESENT PRACTICES

#### 3.1. General :

Prior to the constitution of the Satkosia Gorge Sanctuary in 1976, the forest areas were managed by 5 territorial divisions viz. Angul, Athmallik, Athgarh, Boudha and Nayagarh Forest Divisions. At that time the forest areas were known by Reserve Forests, DPFs, and Khesra forests. Separate Working Plans were in operation for the areas coming under a particular territorial divisions.

#### Working Plans for erstwhile Angul (T) Division portion:

Mr. T.I.Peacock's Plan	(1 <sup>st</sup> Working Plan )	1908-09 to 1922-23
Mr. L.R.Sabharwal's Plan	(Preliminary Working Plan)	1922-23 to 1925-26
Mr. W.D.M. Warren's Plan	(A Scheme )	1925-26 to 1927-28
Mr. R.L.Dirry's Plan	(24 Yrs Plan )	1923-24 to 1946-47
Sri Jee's Plan		1944-45 to 1964-65 extended up to 1980-81
Dr. C.R.Mohapatra's Plan	(Revised Plan 1970-1990)	Implemented after 1980-81
Sri B.P.Singh's Plan		90-91 to 99-2000

**Working Plans for erstwhile Rairakhol Division / Athmallik (T) Division portion:**

Mr. S.B.Das's Plan	(1965 to 1985) (Rairakhol Division)
Mr. Dinesh Singh's Plan	(1985 – 2005) (Athmallik Division)

**Working Plans for erstwhile Nayagarh Division portion:**

Sri N.C.Bal's Plan	1983-84 to 2002-2003
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**Working Plans for erstwhile Boudh Division portion:**

Sri Basudev Mohapatra's Plan	1975-76 to 1994-95 extended till 2000
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**Working Plans for erstwhile Athgarh Division portion:**

Sri G. Mohapatra's Working Plan	
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In all the above plans, emphasis was given mostly for production of quality timber. Up to Shree Jee's Plan of Angul (T) Division there was no mention about Wildlife Management. Dr. C.R. Mohapatra in his Plan had inserted a chapter on Wildlife Management under Miscellaneous Working Circle. But he had not provided suitable emphasis on the subject. Only the names of Acts and Rules prevailing during that time were mentioned.

Sri B.P. Singh for the first time has included a Wildlife Management Working Circle (over lapping) in his Working Plan. By that time the Satkosia Gorge Sanctuary has already been notified. He had divided the Working Circle into to 2 areas i.e.

- a) Wildlife Management in Sanctuary area.
- b) Wildlife Management in other area.

The highlighted Management Prescriptions were as follows :

1. Creation of water holes and of check dams on the Plateaus and higher slopes along nalas to improve water availability in summer.
2. The concept of zonation inside the sanctuary has been felt. He had divided the sanctuary in to four zones, viz. Core zone, Buffer zone, Tourism zone, River zone.

Felling of timber yielding trees above exploitable diameter were allowed even in Core zone without creating any lasting gap in canopy. But no green felling of any kind was allowed in 50 mtr. Width along road, nalla, around game tank, Salt licks and favourite sites of wild animals.

Some other prescriptions were :

- No teak plantation in core area but grass and fruit bearing tree plantation in eroded and blanks were allowed.
- Reduction of cattle population in villages in and around the sanctuary.
- Adequate soil and moisture conservation measures were to be taken during subsidiary silviculture operations (SSO).
- Timber and bamboo working were allowed in sanctuary to be completed before end of February every year.

Prior to 1920, the erstwhile Ruler of Athamallik State had declared the Hatidhara forest as a Reserve for the Wildlife. It was reported that the population

of elephants was enormous in Hatidhara forest leading to elephant catching by Kheda operation there.

There was a ban of shooting of Partridge, Pea fowl and jungle fowl from 1<sup>st</sup> April to 15<sup>th</sup> September in the forests promulgated by the Athmallik State Rulers.

There is no special mention of Wildlife Management in the Rairakhol Plans up to 1964. In the Revised Working Plan of Sri S.B. Das (1965 – 1985), the Wildlife Management was dealt with in a separate chapter (Chapter IX). He had suggested the following measures for the Management of Wildlife:

- To raise anti poaching gates at different places bordering Satkosia Gorge Sanctuary at Kurab and Bipradih.
- To issue shooting permits in a restricted manner and number of such permits should be very small.
- To constitute Hatidhara block into a game sanctuary adjoining to Tikarapara game sanctuary. In Dinesh Singh's Plan ( 1985 – 2005): Wildlife Management was discussed in Chapter XV. No separate W.C. as formed. Habitat

improvement, Infrastructure development, establishment of anti-poaching gates, adequate fire protection measures, raising succulent grasses, salt licks, construction of water holes were some of the suggestions made in the Plan for Wildlife Management. Some of the suggestions were implemented in course of the Plan period, but majority could not be implemented due to paucity of funds.

Sri N.C.Bal in his Working Plan for Nayagarh Division has not kept any Working Circle for Wildlife Management. But he had some prescriptions in general on census operation, Regulation on grazing , Precaution on plantation and grass land development, salt licks, water holes, control burning.

Sri Basudev Mohapatra in his Working Plan for Boudh division applicable to Padmatola R.F. and Arakhapadar R.F. constituting part of the sanctuary did not prescribe any specific working Circle for Wildlife Management. But he has some prescription in general. He has mentioned that Padmatola was notified as a sanctuary vide Notification No.10151/F. 4F. Dt. 22.2.1962 of C..F., Berhampur Circle under Rule 3(1) of the Orissa Government Reserve Forest Shooting Rules, 1938. He has prescribed to renovate the Padmatola game tank and develop few salt licks around it. He had prescribed to construct road, FRH, and watch towers to attract tourists.

Most of the prescriptions of all W.P.OS. could not be implemented in the field due to paucity of funds.

First Management Plan for Satkosia Gorge Sanctuary was prepared by Sri Arun Kumar Mishra, Assistant Conservator of Forests, Satkosia Wildlife Division for the period from 2000 to 2010. Though formal approval has not yet been given, the Government agree in principle all the prescriptions and the Management of the Sanctuary is being carried out as per his prescriptions and Central Government is providing funds under APO as per this plan. This Plan has covered all the aspects of Wildlife Management in general. It lacks some specific recommendations / prescriptions for carrying out some important activities. Site specific treatments

are not prescribed. The Management Plan has been written following the code prescribed by Sri Vishwas B. Sawarkar, Wildlife Institute of India, Dehradun.

He had divided the entire sanctuary area in to 3 zones viz. Core zone or Wilderness Zone (401.28 Sq. Km.), Traditional Use Zone or Multiple Use zone or Apparent Buffer zone (394.24 Sq.Km) and Tourism zone (over lapping (10 Sq.Km Appx). Though the extent has been given, the zone map or description of area under zones were not given as a result the Managers are facing a lot of difficulties to identify the zones.

Problems have been identified but they have not been prioritised following the problem matrix.

Strategies under Zone Plan are as follows :

A. Wilderness Zone :

1. Water resource development – Construction of game tank ,Water storage structures, check dams, Percolation trenches.
2. Vegetation monitoring.
3. Animal health surveillance.

B. Traditional Use Zone :

1. Regulated grazing.
2. Plantation of fast growing fuelwood, fodder, fruit bearing and medicinal plants, insitu conservation of biodiversity.
3. Reclamation of waste land.
4. Community fodder and pasture development.
5. Water harvesting on community base.
6. Eco development activities like,
  - a) Replacement of scrub cattle.
  - b) Fuel wood saving chulla, gober gas.
  - c) Use of Bio fertilizer, organic farming.
7. Weed eradication.
8. Creation of green belt, safety zone, village wood lot.
9. Income generating activities.

### C. Tourism Zone (Over lapping):

Development of tourism points, route,

Strategies on Theme Plan are as follows:

- a) Protection Plan
  - b) Deployment of Task Force at 9 different places. Task force consisting of OSAP, Police APR and Forest Department staff.
  - c) Strengthening Protection by deployment of OSAP in Mahanadi River Squad.
  - d) Fishing regulation.
  - e) Reward to informers (strengthening the intelligence system).
2. Forest Fire Control :
- a) Creation of Disaster Management view point of warning.
  - b) Creating fire lines.
  - c) Post Disaster Management.
  - d) Education, Awareness and Training.
  - e) Role of NGOs / Voluntary organisations.
3. Forest Road construction and maintenance (New):
- a) Padmatola – Dipasahi – 7 Kms.
  - b) Kusang – Padmatola – 18 Kms.
4. Habitat Improvement :
- a) Water Resource Management.
  - b) Riparian area and Mesic site Management.
  - c) Special Habitats and unique Habitat Management.
  - d) Weed eradication.
  - e) Eco restoration of degraded forest area.
  - f) Improvement of prey base to attract more carnivores.
  - g) Special Habitat Management for elephants including corridors.
  - h) Canopy manipulation to improve the browser layer.



5. Soil and Moisture Conservation Measures :
  - a) Vegetative Silt traps.
  - b) Inverted Bandhera.
  - c) Stream improvement.
6. Grazing and Grass land Management Plan .
7. Animal Health Surveillance :
  - a) Artificial .insemination.
  - b) Providing high yielding milch and drought cattle.
  - c) Wipe out of scrub cattle by castration.
  - d) Encouraging stall feeding.
8. Revival of habitat corridors.
9. Measures to reduce Man – Elephant Conflict:
  - i) 20% compassionate amount to be paid within 24 hours of accident and within a week of damage to crops and houses.
  - ii) Driving away of the elephants.
  - iii) Raising fodder plantations and creating water holes for elephants in side the forests.
10. Creation of water reservoirs
11. Relocation of villages outside the sanctuary .
  - 2 Revenue villages – Katrang and Raigoda.
  - 3 Forest villages – Tarava, Asanbahali, Bhurkundi
12. Control of grazing.
13. Encroachment.
14. Joint Forest Management.

Prescriptions under Chapter – 7 i.e. Tourism Interpretation and Conservation

Education:

1. Identification of tourism zones.
2. Infrastructural development.
3. Improvement of GRACU cum Mini zoo at Tikarpara.
4. Interpretative strategy.
5. Orientation centre.
6. Visitor centre cum Interpretation centre at Tikarpara.
7. Improvement of Binikei temple.
8. Provision of signages, Trekking route, Nature trail, Audio visual Programme, Nature camp, Rope way, water sports, angling, , Cactic house, Rock garden.

Prescriptions under Chapter – 8- Eco - Development:

1. Generation of employment opportunities through various departmental works.
2. Alternate livelihood like pisciculture, mushroom cultivation, cottage industry, Handicrafts.
3. Education and Training.

Sri A.K.Mishra in his Management Plan has tried to cover all possible strategies on Wildlife Management. But it is silent over the site specific and quantitative approach in his prescription for which the current Plan needs revision.

### **3.2 Timber operation including Bamboo and Firewood harvest.**

#### **3.2.1 Silvicultlural systems and tending operations.**

Prior to 2000, the sanctuary was managed under various Working Plans where all types of timber and bamboo operations were undertaken. The various Working Circles operated in past under different working plans are as follows:

1. Selection Working Circle.
2. Plantation Working Circle.
3. Bamboo Working Circle.

4. Coppice Working Circle.
5. Sal Selection Working Circle.
6. Selection (Misc. Spp.) Working Circle.
7. Teak Plantation Working Circle.
8. Soft wood Working Circle.
9. Rehabilitation Working Circle.
10. Improvement Working Circle.

During Sri B.P.Singh's Plan period, some measures have been taken to increase the percentage of Sal and other semi evergreen species by implementing proper tending, sowing and planting technique. For the first time Teak plantation was not taken up in the Core area. There was no green felling in 50 mtr. width along the road, nalla, around game tanks, wallows, salt licks and favourite places of wild animals.

Moreover the tree felling was totally stopped in accordance with the ban imposed by the Government of Orissa vide their Notification No.27161/F&E Dt. 12.11.1992 and it is extended from time to time till today. All prescriptions are adhered to in the sanctuary area.

### **3.2.2. Even-aged systems and uneven-aged system:**

#### **Plantations:**

Apart from natural forests, there are number of Teak plantations. These have been raised after clear felling the degraded miscellaneous forest.

About 27,000 ha. of Teak Plantations have been raised inside the sanctuary comprising both the Wildlife Divisions. Out of these only 24 ha. Teak Plantation is found in Mahanadi R.F. in Mahanadi Wildlife Division. The details of plantations are provided in **Appendix-13**.

### **Bamboo Working.**

According to ORSAC report Bamboo occupies 832.68 ha of area inside the sanctuary. The prescriptions given to Bamboo Working by various Working Plan Officers are almost identical.

Bamboo working has been forbidden in all the sanctuary area from 1999 – 2000 coupe year as per Letter No. 6F(A)19/99-19253/F&E Dated, Bhubaneswar 26.10.1999 of G.O.O. Forest & Environment dept. insisted upon to exclude the Wildlife Sanctuaries from the working of Bamboo coupes to avoid distress to the Wildlife.

### **3.2.3. Firewood harvest and collections.**

During timber coupe working, collection of firewood was also an important component. With the moratorium on tree felling, firewood collection has lost relevance. All the people residing within and outside the sanctuary within 10 Kms of radius mostly depend upon the sanctuary for their bonafide fuel wood requirement.

### **3.3. Non Wood Forest Produce (NWP) / Non-timber forest product (NTFP)**

#### **Collection:**

**Information on Kendu Leaf production for the last five year pertaining to**

**Satkosia Wildlife Division:**

1996	1389.0 Qtls.
1997	1326.0 Qtls.
1998	634.2 Qtls.
1999	1446.6 Qtls.
2000	1280.4 Qtls.

At present collection of MFP including Kendu leaf, Bamboo, Mahua flower has been banned completely from the sanctuary area.

#### **3.4. Leases.**

Issuance of leases by the Revenue Dept. for landless people inside sanctuary area has been noticed and objections have been filed. These leases have been issued by changing the status of jungle kism land to non-jungle kism in many cases prior to 1980. This sort of leases might create problem in future as virtually these leases would be legalized after some years and these people would only aid in destruction of forests as this is the easiest means of getting livelihood.

#### **3.5. Other Programmes and activities.**

During Dasa Dola celebration in the month of March, thousands of pilgrims assemble at Binikei and Kanakei Temples thereby causing some disturbance to Mahanadi Gorge Ecosystem outside core zone. Forest fire is one of the disturbances.

### **3.6. Forest Protection.**

#### **3.6.1. Legal status.**

Satkosia Gorge Sanctuary has been initially notified vide Government of Orissa, FFAH Deptt. Notification No.12727/FFAH Dt.19.05.1976. As this sanctuary spreads over four revenue districts, the legal procedure for final notification under Section 26-A of Wildlife (Protection) Act 1972 amended has been seriously jeopardized. The following is the present position:

#### **Cuttack District Portion:**

As per Letter of A.D.M., Cuttack, addressed to deputy Secretary, FFAH Deptt. copy endorsed to D.F.O., Satkosia Wildlife Division vide Memo No.39 Dt.15.04.1987, proclamation u/s 21 of Wildlife (Protection) Act was issued by Collector, Cuttack on Dt.22.11.85 and objection was not received from any person or institution. Subsequently F.S.O, Cuttack enquired the existence of rights enjoyed by persons and found no objection. Instead of taking next follow-up action, the A.D.M. has requested the Government to take further action as per Wildlife (Protection) Act 1972. Said letter of the ADM, Cuttack is enclosed as

#### **Appendix- 14 .**

#### **Puri District Portion (Now under Nayagarh District):**

As per Letter No.494 Dt.01.09.1989 of F.S.O, Puri addressed to Chief Wildlife Warden, Orissa, proclamation has been made. The Collector, Nayagarh in his letter to the Principal Chief Conservator of Forests (WL), Orissa, copy enclosed to DFO, Satkosia (WL) Division, Angul in his memo No. 1401 (51)

dtd.7.9.06 (Enclosed in **Appendix- 15**) has stated that village like Malisahi, Badamul, Bethiasahi, Muduligadia, Kandha Jillinda, Chhamundia, Haripur, Kanipokhari, Bentapada, Iswarpur, Mskajhulia, Raigadia, Mohanpada, Dasipur, Rajing, Dhobabarei, Kumbhirakhani, Salapaganda, Musuguda, Malaspadar, Sagadbhanga and Bahali are situated adjacent to the boundary of the sanctuary. Village Kuturi is situated by the side of the side of the old Jagannath Sadak which is situated near about 4 kms. away from the boundary. They can simply enjoy the right, title and interest of their own land as per their practice and they will just observe the principles of Wildlife (Protection) Act. Hence, he has suggested after final demarcation of the land by Tahasildar, Daspalla the proposal will be moved U/S 26 A of the Act.

**Phulbani District Portion (Now under Boudh District):**

Proclamation under Section – 21 has been issued.

The Collector, Boudh in his enquiry for settlement of rights etc. in his district portion under Satkosia Gorge Sanctuary for final notification under Wildlife ( Protection) Act, 1972 as required under Section 19 to 25 of the said Act has reported to the Principal Chief Conservator of Forests (Wildlife) Orissa vide letter No. 7706/FS dt. 21.8.98 ( enclosed in **Appendix- 16** ) and to Principal Secretary ,F&E Deptt. Govt. of Orissa in his latest letter No.10999 dtd. 23.3.1999, which is enclosed as **Appendix- 17**.

The extract of said letter is as follows:-

There are 17 revenue villages in Boudh District portion namely, Kumari, Bhabapur, Ghungurmunda, Hatigarh, Budhamba, Nuapada, Semiguda, Siripaju, Geredisahi, Hinjal, Satakhand, Kutibari, Atalsara, Sitalpani, Sunakhania, Ghatagaon and Marada.

The details of the above villages are enumerated as follows as per his report to the PCCF(WL) , Orisa vide his letter No.7706 dtd. 21.8.98.

<u>Village</u>	<u>Population</u>	<u>Rayati land</u>	<u>Govt. land</u>	<u>Total area.</u>
13	3298	2522.84 Ac	4531.83 Ac.	7054.67 Ac.

Sunakhania and Ghatagaon villages are uninhabited. The details of 4 villages as above are as follows:

Name of the village	Population				Rayati land ( in Ac)	Govt. land ( in Ac)	Total ( in Ac)
	SC	ST	Gen	Total			
1. Sitalpani	7	5	14	26	8.37	728.05	736.42
2. Marada	49	-	-	49	11.64	62.36	74.00
3. Sunakhania	-	-	-	-	-	32.09	32.09
4. Ghatagaon	-	-	-	-	-	450.69	450.69
Total	56	5	14	75	20.01	1273.19	1293.20

He suggested for exclusion of 13 peripheral villagers and relocation of 2 revenue villages from Boudh District with proper rehabilitation packages. The uninhabited revenue village will automatically merge with the proposed sanctuary.



**Dhenkanal District Portion (Now under Angul District):**

Proclamation has been issued on Dt.18.11.1997 and enquiry by the Collector, Angul has been completed in between Dt. 8.5.1998 to 29.5.1998. The Collector, Angul vide his Letter No.1188 Dt.24.7.98 in the address of Principal Secretary, F&E Deptt. Orissa has furnished his enquiry report for issue of Final Notification of Satkosia Gorge Sanctuary ( enclosed in **Appendix- 18**).

Following recommendations have been made.

1. Total deletion of 9 (Nine) villages of Athmallik Sub-Division measuring Ac. 2458.82 from the sanctuary area.
2. Exclusion of Ac. 12701.19 from the Sanctuary i.e. total area of 20 villages of Angul Sub-Division.
3. Exclusion of Ac. 534.69 from the Sanctuary, being the area of three Forest Villages that are to be declared as Revenue Villages.
4. Acquisition of Ac. 162.28 of land in village Raigoda through Land Acquisition proceedings for shifting of the village to a new site with rehabilitation benefits as per norms of Water Resources Dept.'s Rehabilitation & Resettlement Plan.
5. He recommended exclusion of Ac. 15694.70 area from the sanctuary and advised equal or more area of Reserved Forest adjacent to the sanctuary having no human habitation to be included in the sanctuary.

### **3.6.2. Hunting.**

No past hunting records are available. However the estimation of Wildlife population prepared during 1986 indicates the abundance of Wildlife at that time.

### **3.6.3. Illegal activities.**

#### **3.6.3.1. Poaching.**

Poaching was rampant inside Satkosia Gorge Sanctuary in the past. The poachers mostly from Narasinghpur and Badamba P.S. area of Cuttack district, Banapur of Nayagarh district and Angul, Purunagarh, Talasira of Angul district frequent to interior pockets of the sanctuary viz. Kuadoli, Katrang, Bipradihi, Majhipada, Labangi, Badkheta areas of the sanctuary. Some poachers of these organised gang have been apprehended and forwarded to trial Courts. Some middlemen are involved in ivory trade and some notorious gang leaders are operating clandestinely for years together. They have not been arrested so far by the Police although many warrants are lying un-executed. For the last 2 years (from 2004) by deployment of some local tribals with their traditional weapons as elephant trackers, the poaching has reduced to phenomenal minimum in this sanctuary. During last 3 years it is noticed that poaching have occurred mostly during summer season, form March to July, when water is available in a limited location. Small incidents of poaching do occur in rest of the year. Poaching of tuskers happens mostly in winter season.

### **3.6.3.2. Illegal Cutting of trees.**

Human agency is directly responsible for depletion of forests through illicit felling and its removal, uncontrolled grazing, encroachment, girdling and lopping, setting of forest fires, felling of trees for collection of honey, leaves, fruits and barks. With the population explosion and rise of unemployment of the rural youths, the size of this agency is also increasing day by day with the increasing degree of injuries to the forests. Most of the forest blocks are surrounded by thickly populated villages in which poverty and unemployment has widened its base. The illicit felling of selected teak and Sal trees from the forests of Raigoda, Tulka, Baghamunda and Purunakote blocks have started since 1980.

The organised timber smugglers of Narsinghpur area enter in to Tulka R.F. of the sanctuary enmass numbering 50 – 200 with arms and ammunition and terrorise the APR Force, Magistrate, Local Police and Senior Forest Officers in many occasions thereby forcibly plunder the valuable teak trees worth lakhs of rupees at a time despite all possible protests by local forest staff with arms, ammunition and persuasion. In many occasions due to their indiscriminate firing, our forest Staff have been injured and the patrolling vehicle was broken down. This has culminated on Dt.28.10.2000 into a fierce encounter with the forest brigands and hence deployment of OSAP Force was thought warranted. One Sri Bhagaban Majhi, Forest Guard was brutally murdered on 25.04.1999 at Tulka by the smugglers. One OSAP battalion was deployed in this sanctuary from 28.10.2000 to 19.06.2001. During that period, the illicit felling of trees and

poaching of wild animals was drastically stopped. During 2003, some armed security staff, armed home guards were also deployed besides deployment of one section of Police APR in the sanctuary.

The list of some notorious villages involved in timber smuggling and poaching in Satkosia and Mahanadi WL Divisions are enumerated below which are inside the Sanctuary:

Mahanadi Wildlife Division

Badmul, Marada, Chhamundia, Kuturi, Atalasira, Kusanga, Bethia Sahi, Kandha Jillinda, Muduligadia, Kentapada, Kumari, Malisahi, Dhipasahi, Gerged, Gochhabari

The list of villages situated outside Sanctuary is exhaustive. Names of some notorious villages are worth mentioning:

Angul Division	Athgarh Division	Nayagarh Division
1. Purunagarh	1. Chakragada	1. Banpur
2. Nuakheta	2. Balisahi	2. Manibhadra
3. Saruali	3. Nuagaon	3. Madhya Khanda
4. Bolonga	4. Balikiari	4. Ghughdipada
5. Talasira	5. Nukhapada	
6. Manikjodi	6. Kenagudi	
7. Jarada	7. Kendumula	
	8. Jagannathprasad	

	9. Saradhapur	
	10. Asanania	
	11. Ainsia	
	12. Ulaskote	
	13. Ranasinghpur	
	14. Alara	
	15. Nimasahi	
	16. Krushnaprasad	
	17. Narsinghpur	
	18. Barabhaya	
	19. Nuagada	
	20. Mitikapur	
	21. Nakhapada	

The most smuggling prone Forest blocks in this sanctuary are Padmatola R.F., Arakhapadar R.F. & Mahanadi R.F. in Mahanadi Wildlife Division and Tulka R.F., Raigoda R.F., Bolong R.F., Jacobo R.F., Takarsingha R.F. ,Chhotamunda R.F. ,Tainsi R.F., Majhipada R.F., Baghamunda R.F,Kuru R.F. Purunakote R.F. ,Kataranga R.F. and Tikarpada R.F. in Satkosia Wildlife Division.

During 2000, organised armed timber smugglers from Narasinghpur area of Cuttack district entered into Tulka R.F. enmass numbering more than 200 at a time and plundered matured teak plantations in Compt. No. 7 & 8 worth lakhs of

rupees. There are innumerable encounters with these notorious forest brigands in presence of APR force, Executive Magistrates, Local Police and Senior Forest Officials. There are incidents of firing and counter firing thereby the situation become alarming. After the last brutal encounter on 28.10.2000, one platoon O.S.A.P. force was deployed at Tulka. Earlier on Dt.25.4.1999, Late Bhagaban Majhi, Forest Guard, Tulka was brutally murdered by timber smugglers. So it was felt essential to constitute three Task Forces for Satkosia with the Chairmanship of three Collectors, viz. Collectors of Angul, Cuttack & Nayagarh for respective areas under their Revenue districts. One action plan was also formulated in pursuant to the meeting chaired by the Chief Secretary on 31.8.2000 for protection of Satkosia Wildlife Sanctuary. Search & seizure operation in well-targeted manner was undertaken on a sustained basis. Frequent patrolling was done with the help of OSAP Force and many notorious timber smugglers and poachers were arrested. The force was also utilized by adjoining Divisions of the Sanctuary and huge quantity of timber had been recovered then.

### **Vulnerable Places of Illicit felling and Poaching.**

In view of rampant illicit felling, the following places are considered to be vulnerable within the Satkosia Gorge Sanctuary.

#### **1. TULKA.**

At present this Section is the most vulnerable area due to large scale illicit felling of valuable teak trees by the organised armed groups coming from Narsinghpur area of Cuttack District numbering from 100 to 200 at a time through Sisupathar Dam, Balikiari Murujanala and Bhurkundi.

#### **3. RAIGODA.**

Illicit felling in Raigoda Section is frequently done by smugglers of Narasinghpur and Nuagarh area of Cuttack district.

### **3. LABANGI.**

Armed timber smugglers from Garhtaras, Nuakheta, Bantala of Angul district enter enmasse with bullocks, axe for cutting teak trees numbering from 60 to 80 at a time.

### **4. ATHARMILE.**

Purunagarh villagers under Angul P.S. come in large group and illicitly fell the teak trees and take away them by their shoulders or by buffalo yokes.

### **5. KATRANG.**

Poachers and timber smugglers from Jillinda Range and Chamundia Range come in groups for illicit felling and poaching of wild animals.

### **6. DOLASINGA.**

This is the main timber hoarding and smuggling village close to sanctuary boundary on the western side. Smugglers from Purunagarh area fell tees in Baghamunda RF and pass through Dolasingha.

### **7. TAINSI.**

Tainsi is another important hoarding and smuggling area at the periphery of the sanctuary. .

### **8. MAHANADI RIVER.**

River route was then the lifeline of smuggling of timber and kendu leaf in the sanctuary extending from Athmallik up to Balijhari, Narsinghpur and Banpur, outside the sanctuary zone. After formation of Mahanadi river squad from 2001, the smuggling activities have drastically reduced.

## **9. BALIKIARI (Narsinghpur (West) Range of Athgarh Division, outside the sanctuary).**

Balikiari is strategically located close to Muruja nalla, Tentulibanka which is the main entry point for timber smugglers of Narsinghpur area to enter in to Tulka Forest. Barasingha and Jaypur khola are entry points to Raigoda Forest.

### **3.6.3.3. Illegal Removal of NWP.**

Hundreds of people from villages out side the sanctuary area resort to illegal cutting and removal of bamboos. This has resulted in depletion of bamboo resources from the sanctuary in the periphery zone, thereby creating problems for the elephants in future. Similarly, fishing though restricted within the Mahanadi Gorge area often disturbs Gharials and Muggers. Many people within the sanctuary collect Honey, Sal leaf, Sal resin, Mahua flower, Muhua seed, Amla, Harida, Bahada, Tendu leaf etc. for their bonafide use.

### **3.6.3.4. Encroachment and other illegal activities.**

Encroachment is not a problem inside sanctuary.

### **3.6.4. Domestic livestock grazing.**

There are 99 Revenue villages and 3 Forest villages within the sanctuary. There are 180 revenue villages within 5 Kms. of radius of the sanctuary boundary. The total live stock population of the revenue villages situated inside sanctuary is 35,235, which includes 16,260 Cows, 6,003 buffaloes, 12,107 Goats and 865 Sheep. About equal number of live stock graze inside sanctuary . Goat population is increasing thus competing with the population of Sambar, Barking deer and other browsers of the sanctuary. Village wise list of domestic live stock population is given in **Appendix- 19.**



Severe damage is caused to the forest crops through grazing by domestic animals. With the increase of human population, population of cattle has also tremendously increased. Large herds of cattle and buffaloes are kept by villagers not only for ploughing agricultural fields or pulling carts or getting milk but also to get more dung for use in their field as they do not spend any thing for survival and maintenance of these cattle. Grazing fees charged earlier was very nominal. These cattle are let loose for grazing and browsing. This uncontrolled grazing and browsing causes severe damage to plantations and natural regeneration of forests. In the process of grazing branches of trees, poles and bamboos are lopped regularly, seedlings trampled and soil compacted with the result that establishment of vegetation becomes more and more difficult. All the forest blocks of the division are prone

to heavy grazing and browsing except Raigoda, Tulka and a portion of Purunakote, Baghmunda and Majhipada.

#### **3.6.5. Wild Fires.**

The forests inside the sanctuary are dry deciduous with limited patches of moist ones. Due to the prolonged hot-dry weather, the thick cover of fallen leaves in these dry deciduous forests dry up soon and become inflammable. Forest fire occurs every year, it is man made and some of the forest blocks are burnt. It is all ground fire. Fire causes damage to ground storey of the forests. The factors responsible for are :

- a) In collection of fruits and Mahua flower.
- b) To burn the kendu bushes to get good leaves in some areas.
- c) To get vigorous growth of fodder grass for grazing.
- d) To get ash in agricultural fields.
- e) To drive away wild animals for poaching as the visibility is increased by opening the forest under growth.
- f) To get pleasure of fire in the night.
- g) The villagers set fire the dry leaves while going along the forest roads for marketing, attending yatras without any reason.

During the fire season, forest fire affects about 8 – 10% of sanctuary.

Fire is one of the greatest dangers that the forests of Satkosia Sanctuary encounter from 15<sup>th</sup> of February up to the onset of monsoon. It causes irreparable damages to the young regeneration of seedlings and coppice growth and affects adversely the saplings and poles. The top forest soil is baked and all the available organic matter as well as the micro-fauna of the top soil get destroyed which ultimately affects the general health of the forest vegetation. The trees that withstand the fire hazards normally become defective and develop unsoundness at an early age. This is amply visible in most part of degraded deciduous forests of the sanctuary.

Most of the bamboo brakes suffer a great deal due to forest fire.

Deliberate fire is the principal cause of forest fire in Satkosia Gorge Sanctuary causing temporary migration of wildlife to riparian and moist habitat. Mahanadi river being the principal perennial river most of wildlife wander around this riparian habitat and around its principal tributaries perennial to semi-perennial nature.

### **History of previous events.**

Forest fire becomes a regular feature every summer in Satkosia Gorge Sanctuary. It becomes evident towards the end of winter i.e. onset of summer when the deciduous trees shed their leaves forming a pile of inflammable material on forest floor. These dry leaves, dry branches, dry shrubs and grasses constitute serious fire hazards. First sign of forest fire normally starts along road side and bridle paths.

Repeated forest fire was observed during 1986, 1988, 1998, 2001 drought season when the lethal sun stroke coupled with prolonged dry spell was experienced throughout the sanctuary. During summer of 1999 and 2000, forest fire was less extensive following intermittent showers due to cyclonic rain effect.

### **Nature and extent of losses:**

Colossal loss to the forest wealth is being caused every year due to repeated forest fire. It is not possible to quantify as no such fire relief is provided as it is restricted to forest areas. The destruction caused by forest fire is incalculable as forest provides both tangible as well as intangible benefits.

It has been noticed that during the summer of 2001 felling refuse on forest floor of Tulka created fire hazards. Every year controlled fire along the R.F. boundaries, forest roads, engagement of fire watcher and intermittent cyclonic rain some what helped in reducing the fire effect. Repeated forest fire during 1998 caused considerable damage to natural regeneration, saplings, forest soil, productivity of forest, micro-fauna etc. Forest fire forces the wildlife to migrate to save them from it. Due to loss of fodder and refuge they suffer and become vulnerable to poaching.

**Existing arrangement for preparedness / mitigation / response mechanism:**

By the end of March every year forest fire sweep across forest floor depending on leaf litter and frequency of cyclonic rain.

Subsequently during April-May some times another one round of sporadic fire is being noticed depending upon the aforesaid two factors. Controlled fire along the R.F. boundaries, forest roads, engagement of fire watchers, organisation of awareness meetings during February and March bring the forest fire under control. Some traditional firefighting equipments have been provided to the staff but they are not so effective. Firelines are being cleared to a limited scale and limited fire watchers are being engaged to extinguish fire. Besides group patrolling at Range level, mobile patrolling at Divisional level are being organised in fire season. The field staff are being trained to know the fire fighting techniques i.e. counter firing, fire beating with branches which are the easiest method. Previously, working plan

prescriptions were scrupulously observed with respect to boundary line maintenance, creation of external and internal fire line etc. These practices are now observed in a lesser degree due to inadequacy of funds. Posters and signboards are being affixed at prominent places and awareness meetings are being organised to create awareness among people to prevent forest fire.

### 3.6.6. Insect attack and pathological problems.

#### 3.6.6.1. Insect attack.

The damage caused to the forests and plantations by defoliators, borers and other insect pests have not been estimated quantitatively. However certain amount of damages are caused to the crop by the following insects.

1.	Hoplocerambyx spinicornis (Sal Heart wood borer)	Causes damage to sal trees.
2.	Weevil(cytotrachelus longipes)	Causes damage to top of new bamboo culm.
3.	Estigueno chinensis	Causes tunneling of inter nodes of new culms.
4.	Hapalia machaerlis (Teak skeletonizer)	Causes damage to teak leaves, attack more in Sept – Oct.
5.	Hyblaea pleura (Teak defoliator)	Causes damage to teak leaves. During 15 <sup>th</sup> -20 <sup>th</sup> August,2006 teak plantations of entire sanctuary was infested with

		<p>defoliators. The leaf turned reddish brown, dried and fallen down. The caterpillars were hanging from trees with thread lines excretions from their body. They were in swarms entered in the houses of people and disturbed them.</p>
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### **3.6.6.2. Pathological problems.**

No record is available in support of serious damage of forests due to diseases by pathogens

### **3.7. Tourism.**

#### **Satkosia Gorge.**

The narrow ten metre deep half a kilometer wide gorge extending 7 Koshas or 14 miles or 22 kms with a chain of wooded high towering hills on either side of river Mahanadi having crystal-clear water reflecting the hills and leisurely drifting clouds is simply fascinating and absorbing. In particular the sunset over the gorge at Tikarpara presents spectacular view. Here time seems to have frozen in tune with the flow of water. During winter, visitors enjoy basking of Gharials and Muggers on sands of riverbank that too by motor launches available in this division.

### **Existing Scenic spots.**

The following picnic spots are located inside Satkosia Gorge Sanctuary:

#### **1) TIKARPARA.**

Here the scenic beauty of panoramic gorge in river Mahanadi can be most easily viewed. The reflection of towering hills on both sides of the river and the moon light can be enjoyed on still water of the river.

Visitors can also enjoy the following :

- a) Proposed Rescue and Rehabilitation Centre of fresh water reptiles.
- b) Erstwhile Gharial Research Centre with Muggers and Gharials for demonstration purpose.
- c) Temple of Lord Shiva on the bank of river Mahanadi
- d) Natural basking site of crocodiles on sand bed in river.
- e) Flock of migrated birds (Brahminy ducks) in winter.
- f) Cruising in departmentally approved motor boats.
- g) Sylvan beauty of deciduous forests which changes colour with seasons.

#### **2) BINIKEI & KANAKEL.**

Temple of Goddess Binkei on the bank of river Mahanadi 8 kms upstreams from Tikarpara in Satkosia Division & Konkei Temple on the bank on opposite side of Binkei temple in Mahanadi Division are places of pilgrimage.

#### **3) BALIPUT.**

On river bank famous for picnic and scenic view of river Mahanadi and for chain of remote high hills on both sides of river Mahanadi. It is 20 kms from

Tikarpara. A Forest Rest Shed is available there. A new picnic site has been developed near it. There is provision of hill climbing, trekking, rock climbing to Baigani Pahad near Kamaladiha which is suitable for youths and is a memorable item for eco tourists. Boating / Cruising by fibre motor boat is really memorable.

#### **4) SISUPATHAR.**

There is a dam at Sisupathar village on Suhagi nala. Picnic spots are near the dam site. Tourists can sight wild elephants during summer.

#### **5) TULKA.**

Bhimdhara water fall and Satidhara perennial stream surround the dense forests. A Forest Rest House is there for the tourists. All types of wild animals like Tiger, Leopard, Elephant, Bison, and Deer are sighted in the nearby forests.

#### **6) LABANGI.**

It is very popular for scenic beauty of the forests and high wooded hills. The FRH is very calm and quite. Dense forests with perennial streams bring it to the tourist map. There is a water reservoir, watch tower 2 km away where all types of wild animals can be sighted. Salt licks have been maintained on the bank of the water reservoir there.



**7) PAMPASAR.**

Bhurbhura Nala area is a good picnic spot 4 Kms away from Pampasar. Forest Rest House is available near entry point check gate at Pampasar. There is a water fall on the nalla with a single stone from where the fall descends.

**8) BAGHMUNDA.**

The forest of Baghamunda is enjoyable. All types of wild animals are present there. There is one F.R.H. at Baghamunda.

**9) KANDHAIDA.**

It is 5 Kms away from Hatibari village on Angul Tikarapara PWD road..There is one watch tower there for viewing of the wildlife.Grass land, salt licks are present surrounding the game tank there. All the wild animals are sighted there during summer and winter.

**10) KADALIKHOLA.**

It is a water reservoir inside Majhipada RF 12 Kms from Karadapada. Watch tower, grass land and artificial salt licks are present there. All types of wild animals are sighted there.

**11) PADMATOLA.**

It is a scenic spot with water storage structure, watch tower and salt licks. All types of wild animals can be sighted there.

**12) SITALPANI.**

This is in the zone of tranquility and is a cooler place. The scenic beauty of the place is really enjoyable. A good water reservoir has been dug recently there. All types of wild animals can be sighted there.

### **13) BADAMUL.**

Badmul is on the opposite site of Baliput in Nayagarh district. It is a picnic spot on the bank of river Mahanadi. A watch tower has been constructed on a hill top recently adjacent to irrigation I.B. from where the view of river Mahanadi can be enjoyed. It is a magnificent place and is really enjoyable.

### **14) KANTARSINGHA.**

A watch tower and salt licks, water reservoir complex 3 kms away from Labangi present a panoramic view ideal for tourists for sighting of all types of wild animals.

### **15) HATIGIRIJA.**

A watch tower, water reservoir and salt licks around 3 kms away from Purunakote in Kuru R.F. presents a picturesque view ideal for animal sighting by ecotourists.

## **4. Communication System :**

The entry point of sanctuary i.e. Pampasar is about 30 kms from Angul to the South and about 160 Kms. From Cuttack and 190 Kms from Bhubaneswar. Angul is well connected by road ( N.H. 42, N.H. 5 and N.H. 6) from Cuttack, Bhubaneswar, Sambalpur, Pallahara, Deogarh and Rourkela and by train from Angul, Sambalpur, Cuttack and Bhubaneswar. Nearest Air Port is Bhubaneswar. Kusanga is the entry point from Boudh district side via Charichhack. Similarly Chhamundia is another entry point from Nayagarh district side located in Mahanadi Wildlife Division side South of river Mahanadi. Baliput is entry place in Cuttack district via Khuntuni, Athgarh and Narsinghpur.

## **5. Present status.**

Elephants, Gaur, Giant squirrel, Spotted deer, Barking deer, Sambar and the crocodiles are the common wild animals to which a visitor is usually attracted. There are host of other interesting animal life too in the sanctuary which can be encountered during dawn or dusk in a drive.

### **Water bodies and salt licks :**

1. Kandhaida
2. Kadalikhola
3. Routbahal
4. Buchunda Bhogra
5. Ranibandha
6. Kantarsinga,
7. Takarsingha,
8. Paintiri,
9. Dihasahi,
10. Hatigirija.
11. Rasanda
12. Khujurinala
13. Nadapathar
14. Padmatola.
15. Chhotkei 2 nos.(W.H.S.& Srota India)
16. Badkheta

17. Raigoda
18. Ramimunda
19. Tulka
20. Chhamundia
21. Sitalpani
22. Dihasahi & Asanbahal
23. Bhurkundi

**Watch Towers :**

1. Kandhaida
2. Kadalikhola
3. Padmatola
4. Kantarsingha
5. Hatigirija
6. Marada

**Eco-Toursim Tower :**

Tikarpada.

**River :**

Mahanadi river.

**Water fall :**

There is one fall Bhimdhara near Tulka in this sanctuary.

**Forest Rest Houses :**

1. Tikarpara
2. Baghmunda
3. Purunakote
4. Tulka
5. Raigoda
6. Labangi
7. Pampasar
8. Baliput
9. Chhamundia
10. Jillinda

**Migratory Birds :**

1. Bramhiny ducks
2. White-eyed pochards
3. Shovellers.

## 6. Present Position of Tourism :

Tourists from inside and abroad are visiting the sanctuary mainly from October to February. The average number of visitors to this sanctuary is from 25,000 to 35,000 who visit throughout the year and this sanctuary is getting good revenue more than 1 lakh / year. The average statistic of revenue is as follows:

Year	No. of tourists	Revenue in Rs.
1990-2000	16867	
2000-01	12351	-
2001-02	19294	-
2002-03	16414	69,560
2003-04	34015	79,179
2004-05	37818	91,137
2005-06	42318	1,12,612
2006-07	41320	2,90,362

## 7. Present Attraction in Tourism :

Present attraction of the sanctuary is Tikarpara for its natural beauty, Demonstration Centre at Tikarpada, Gharials and Muggers, Picnic spots, sighting Wildlife from the watch towers located at Kandhaida, Kadalikhola, Hatigirija, Kantarsingha , Tikarpara, Marada and Padmatola. Nature trailing inside deep forests of the sanctuary near Purunakote is really refreshing.

Apart from the local visitors, a lot of Bengali tourists usually visit Tikarpara, Labangi, Tulka and Baghmunda. They prefer to stay in 2 to 3 nights and visit inside the sanctuary for sighting of the wild animals. The watch towers and water reservoirs of Kandhaida, Hatigiriya, Kadalikhola, Kantarsingha are the major attractions for them.

Now the F.R.H. at Tikarpara, Labangi and Tulka are fitted with solar lights. Best time for visiting the sanctuary is winter.

Contact vehicles are available at Angul who bring the tourists for visiting the sanctuary.

Recently one NGO named Tikarpara Parivesh Paryatan Samiti (TIPPS) has been organised with youths of Tikarpara village. They have committed for all types of services to the ecotourists. They also arrange cooked food for the tourists. They take them to various scenic places, along the nature trails, conduct adventurous trek, take them for animal sighting, help boat riding. They also arrange displaying of traditional folk dances to the tourists.

The TIPPS members arrange utensils, tents, Fuel wood, Water to the tourists. They clean the premises of the picnic site at Tikarapara. In return they get some livelihood support.

### **3.8. Research, Monitoring and Training :**

#### **Tikarpara Crocodile Project :**

Government of Orissa decided to protect Gharials and Muggars left in Satkosia during March 1974. Dr. H.R. Bustard, an F.A.O. Consultant on

crocodiles visited the place during June 1974 and recommended for a Conservation Project. The Project started during March 1975. Dr. H.R.Bustard worked as Chief Technical Advisor in the project till 1980.

The project had a three phase plan : Collection of wildy laid eggs for hatching, incubation and rearing of hatchlings up to 1m. long size and releasing the hatchlings in Satkosia Gorge for rehabilitation.

### **3.8.1. Training :**

Although all field staff are trained in forestry yet one has only specialized training in Wildlife. There is an urgent need for training to all staff on wildlife to carry out monitoring operations like vegetation study, habitat quality assessment, use of tranquillization equipment, capture of problematic wild animals and their treatment, use of fire arms etc.

### **3.9. Wildlife Conservation strategies and their evaluation :**

Poaching record is as follows with different wild animals poached in this sanctuary.

Month	2004-05	2005-06	2006-07
April	-	<b>2</b>	<b>3</b>
May	-	<b>1</b>	<b>2</b>
June	<b>1</b>	<b>2</b>	-
July	-	-	-
August	-	<b>1</b>	-



September	-	1	-
October	-	1	-
November	-	-	2
December	-	-	-
January	-	1	-
February	1	-	-
March	1	-	2

Maximum poaching is reported during summer season i.e. from March to June.

Last tiger shooting was noticed on 31.3.2007. Elephant poaching was noticed on 19.6.2003, 04.11.2003, 18.01.2004, 26.3.2005, 21.02.2005, 30.9.2004, 10.3.2005, 28.5.2005, 18.6.2005, 04.02.2006, 23.3.2006, 17.4.2006, 24.11.2006 & 26.11.2006. Though patrolling in forest was going on, steps taken were not so significant.

### **3.10. Administrative Set up :**

River Mahanadi nearly divides the sanctuary into two parts, north of river Mahanadi is managed by D.F.O. Satkosia WL Division and South by D.F.O. Mahanadi W.L. Division. D.F.O. is the head of the Division and one A.C.F. in each division assists the D.F.O. in overall supervision of the sanctuary.

Systematic Management of Wildlife of the division started after the area was notified as a Sanctuary in 1976. The sanctuary was under control of ACF, Chandabali long back with headquarters at Angul. In 1985, a separate Wildlife Division with headquarters at Angul was created for intensive management of the

sanctuary. The DFO was having then overlapping jurisdiction over sanctuary portions of Angul, Athmallik, Athgarh, Boudh and Nayagarh Territorial Divisions. He was looking after the Wildlife Management aspects of the sanctuary. During 1999, Government vide their Notification No. 13060/F&E . 8F(WL) Dt.12.7.1999, assigned territorial jurisdiction of the sanctuary to 2 Wildlife Divisions, Satkosia Wildlife Division with headquarters at Angul with Northern part of the sanctuary including the river Mahanadi and Mahanadi Wildlife Division with headquarters at Nayagarh (earlier at Phulbani), assigned the part of the sanctuary South to river Mahanadi in addition to Baispali Sanctuary.

The details of field set up are given below:

<b>Satkosia Wildlife Division, Angul</b>		
<b>Range</b>	<b>Section</b>	<b>Beat</b>
1. Purunakote	1. Tulka (N)	1. Tulka (A) 2. Tulka (B) 3. Tulka (C)
	2. Tulka (S)	3. Tulka (D) 4. Tulka (E) 5. Tulka (F)
	3. Purunakote	7. Chhotkei (A) 8. Chhotkei (B) 9. Purunakote (A) 10. Purunakote (B)
	4. Baghamunda	11. Baghamunda (A) 12. Baghamunda (B) 13. Baghamunda (C)

2. Pampasar	5. Pampasar	14. Pampasar (A) 15. Pampasar (B) 16. Jagannathpur (A) 17. Jagannathpur (B)
	6. Labangi	18. Labangi (A) 19. Labangi (B) 20. Labangi (C)
	7. Kumuri	21. Kumuri (A) 22. Kumuri (B)
	8. Tarava	23. Tarava (A) 24. Tarava (B)
3. Jillinda	9. Jodum	25. Baliput 26. Kamaladihi 27. Jillinda 28. Sisoopathar
	10. Katrang	29. Katrang (A) 30. Katrang (B) 31. Katrang (B) 32. Siaribhundi
4. Tikarpada	11. Tikarpada	33. Tikarpada (A) 34. Tikarpada (B)
	12. Majhipada	35. Majhipada (A) 36. Majhipada (B) 37. Naleswar
Raigoda	13. Raigoda (E)	38. Raigoda (A) 39. Raigoda (B) 40. Raigoda (C) 41. Raigoda (D)

	14. Raigoda (W)	42. Raigoda (E) 43. Raigoda (F)
	15. Bhurkundi (W)	44. Bhurkundi (A) 45. Bhurkundi (B)
<b>Mahanadi Wildlife Division, Nayagarh</b>		
<b>Range</b>	<b>Section</b>	<b>Beat</b>
1. Chhamundia	1. Badamul	1. Kuturi 2. Badamul 3. Malisah
	2. Chhamundia	4. Chhamundia 5. Rajingi 6. Muduligadia 7. Khandadhua
	3. Dhipisahi	8. Dhipisahi 9. Gergedi
	4. Purunapani	10. Purunapani 11. Malasapadar
2. Kusanga	5. Kusanga	12. Kusanga 13. Nuapada 14. Kumari
	6. Sitalpani	15. Marada 16. Sukhania 17. Sitalpani 18. Atalasara
	7. siripaju	19. Padamatola 20. Siripaju 21. Nandagadu 22. Hinjala

**The existing pattern of staff by hierarchical levels in both the Wildlife Divisions with sanctioned strength, vacancy position is as follows:.**

Name of the Division	Name of the post	Sanctioned strength	Staff in position	Vacancy position
Satkosia Wildlife Division, Angul	DFO	1	1	-
	ACF	1	1	-
	R. O.	7	4	3
	DY.R.O.	1	1	-
	FORESTER	22	14	8
	F.G.	59	25	34
	G.G.	6	3	3
	Bungalow	4	4	-
	Choukidar	1	1	-
	Pool Attendant	1	1	-
	Pumpman	1	-	1
	Jr. Vet Officer	1	-	1
	V.A.S.	1	1	-
	Head Clerk	1	1	-
	Accountant	4	4	-
	Sr. clerk	7	6	1
	Jr. clerk	1	1	-
	Stenographer	1	1	-
	Amin	2	2	-
	Driver	1	1	-

F.E.O.	5	5	-
V.F.W.	1	1	-
Office Choukidar	1	1	-
Office peon	1	1	-
Mali	1	1	-
Sweeper			

### 3.11. Forest Road :

Badakera – Tikarpara P.W.D. road passes through the sanctuary from Pampasar entry gate in to sanctuary covering 30 Kms. in sanctuary, which is being maintained by the P.W.D. Department of State Government. This road is used by local people day and night. Vegetable traders are also using the road. Hares, snakes, civets are meeting accidents even in nights. One State Transport and two private buses are plying daily. People have tendency to speed up the vehicles in the roads passing through the sanctuary which seem controlled by erection of several speed breaker hoardings.

River View road from Tikarpara to Baliput, 18 Kms long is a fair weather road used for mobile patrolling and for tourists coming from Cuttack district to Tikarapara. Ramgaon nalla and Katarang nalla are 2 major interruptions. This road gets disrupted during rainy season due to back water of river Mahanadi. Baliput is another entry point in to the sanctuary.

Raigoda is accessible from Angul side through Nuakheta. A forest road starts from Nuakheta to Raigoda 7 kms long. There are several forest roads inside

the sanctuary to facilitate movement of villagers dwelling inside. All the forest roads are earthen roads which regularly wash away every year during rainy season and need repairing every year.

There are 237.25 Kms of forest roads, 40 Kms of PWD roads and 33.5 Kms of Panchayat roads inside the sanctuary. Detail break up is given in **Appendix- 20**.

**Buildings:**

The list of official and residential buildings of the sanctuary including the F.R.Hs are given in **Appendix- 21**.

**Wireless Network :**

There is a good VHF net work operating inside the sanctuary. Some stations are operated by solar chargers. Base stations are located at Angul, Pampar, Labangi, Raigoda, Jillinda, Katarang, Baliput, Tikarpara, Majhipada, Purunakote, Tulka, Baghamunda, Jagannathpur, Marada, Badamul, Chhamunda, Kuturi, Nuagarh(Athgarh Dvn.) and Balikiari (Athgarh division). Mobile sets are fixed in all the 3 jeeps of Satkosia Wildlife Division and one jeep of Mahanadi Wildlife Division. Besides that there are 10 no. of hand sets used by the Officers, Other field staff & staff in river squad..

**Vehicles :**

<b>Satkosia Wildlife Division</b>		<b>Mahanadi Wildlife Division</b>	
1.	Jeep OR-06-C 2339 – 4W Diesel	1.	Bolero
2.	Jeep OR-06-C 5281 – 4W Diesel	2.	Motor cycle (Rajdoot)

3.	Commander Jeep OR 06C 2132		
4.	Motor cycle OR-06-C 2264 Rajdoot	3.	Fibre Boat (10 seater) - 1 no.
5.	Motor cycle OR-06-C 0116 Rajdoot		
6.	Motor Launch Vikrant (Mechanised)		
7.	Motor Launch Basanti (Old Mechanised)		
8.	Fibre Boat Savanna & Maa Baigani (10 seater each)- 2 nos.		
9.	Fibre boat Maa Binikei( 20 seaters) – 1 no.		

It is not possible to run the vehicles in interior pockets of the sanctuary as there is no forest roads there. It is experienced that timber smugglers of Narsinghpur area enter in to sanctuary via Murajanala and the same is not accessible from Tulka side during rainy season. As the timber smugglers and poachers enter in to the sanctuary in mass with lethal weapons .Sufficient jeeps and motor cycles are to be put to action for group patrolling throughout the nook and corner of the sanctuary.

**Check gates :**

Gates are there at all possible entry points into the sanctuary like Pampasar, Chakamunda, Nuakheta, Baliput, Kumuri, Bhurkundi, Badmul, Chhamundia, Kusanga and Sitalpani.



Some unmanned anti-poaching gates have also been erected at places like Tikarpara, Bhurkundi, Siaribhundi, Purunakote, Majhipada, Hatibari, Labangi.

### **3.12. Summary of threats to Wildlife :**

The possible threats in the present context is summarized below:

1. Illicit felling by armed organised timber smugglers in groups.
2. Poaching of elephants and other wild animals done through the local poachers by mafias of Narsinghpur, Badamba, Banapur and Angul.
3. Illegal fishing activities in river Mahanadi.
4. Habitat degradation due to biotic interference viz. grazing, forest fire, collection of small timber, fuel wood, MFP by the villagers.
5. The threats to wild life is compounded by the poor socio economic condition of people in and around the sanctuary.

## CHAPTER – 4

### THE PROTECTED AREA AND THE INTERFACE LAND USE SITUATION

#### 4.1. The existing situation in the zone of influence (ZI).

##### 4.1.1 The location, extent, boundaries and natural attributes of the ZI.

Villages comprising of both tribal & non-tribal communities, situated in side and outside the sanctuary within 10 Kms of radius, traditionally dependent on the resources of the sanctuary. The residents of these villages have their subsistence economic activities extending to forests inside & outside the sanctuary as well. Such extent of area has been taken as maximum 10 km away from the sanctuary border. Hence all the forests and villages situated within 10 km radius of Satkosia Sanctuary boundary has been taken as zone of influence, in which the people's activities extend.

Villagers of the Zone of Influence suffer a lot due to loss of job opportunities following stoppage of almost all forestry operations within the sanctuary viz. timber coupe working, bamboo extraction, collection of NTFP by different lessees, stoppage of kendu leaf operation, restriction in fishing and movement of boats in river Mahanadi etc. Other consequences include drastic curtailment of resources used by people, appearance of new wildlife problems at the interface such as crop raiding, destruction of property, cattle killing, injury to people or man animal conflict attributed to wild animals.

#### **4.1.2 Villages inside and outside the P.A, Ethnic identity and customs, relationship with forests.**

There are 99 Revenue villages inside sanctuary viz. 32 in Angul district, 21 in Cuttack district, 26 in Nayagarh district and 20 in Boudh district. The total human population in Revenue villages is 31,586 and corresponding cattle population including goats and sheep comes to 35,235. There are 180 villages within 5 km. and 232 villages within 5 to 10 km of sanctuary boundary. Most of the people depend upon Rain fed agriculture while the rest earn their livelihood as daily wage labourers.

Some of the people belong to Kandha and Kolha tribe. Besides them, there are some fishing communities numbering about 800 in 20 villages along the river Mahanadi. The ethnic identity is thus varied, tradition and customs also vary accordingly. There is no major rift between communities and they mostly live in harmony with existing socio-political scenario. Almost all tribals are sanctuary resource dependent but a few non-tribals resort to illicit felling and poaching as a means of earning quick money.

### Rights and concessions of the people :

Name of the Division	Name of the RF	Area in Acre as per working plan	Notification No. & Date	Rights & Concessions
Angul Division	Nuakhet a	7415.00	1597 dt.20.3.1894 3523 dt.23.7.1895	<p><b>Section – XIII: Rights and Concessions: Reserved Forests of Angul Sub-Division</b></p> <p><b>69.</b> No right exists in the reserved forests of Angul Sub-Division but the following concessions are allowed.</p> <p>Tenants of Angul Sub-Division, were being supplied timber and bamboos from the reserved forests of Angul Sub-Division at the concessional rate of 50% of scheduled rate for their own domestic &amp; agricultural requirements only and not for any other purpose, if these trees could not be had in the forests adjacent to their villages or in the neighboring protected forests. The tenants would not however be entitled to the supply of timber of the species Sisoo, Gambhari, Piasal &amp; Teak under this concession. As ascertained from the Divisional Forest Officer (vide his letter No. 13104 dt.21.11.88) no supply of forest materials had been done to the tenants from the reserved forests of Angul Forest Division. The supply has been made from U.D.P.Fs only on realization of one time full schedule rate of royalty. However prior to removal, application must be made to the Divisional Forest Officer who, before, granting such produce, will satisfy himself that;</p> <p>(i) The produce required is not available in any of the protected forests near the applicant's village.</p> <p>(ii) The produce is required for the applicant's own use &amp; not for sale or barter in or beyond the limits of Angul Sub-division. In meeting the requirements of the tenants, no deviation from prescriptions of</p>
	Balanga	9182.77	1597 dt.20.3.1894 3523 dt.23.7.1895	

				sanctioned working plan will be permissible. That is to say that supplies will be made from the coupes of the year & subject to yield capacity. Grazing is allowed as per provisions of "The Orissa Forest (Grazing of Cattles) Rules, 1980".
Name of the Division	Name of the RF	Area in Acs.	Notification No. & Rate	Rights & Concessions
Athagarh Division	Balikiary	13650.00	34016-12-F-179(M)-57-D dt.9.11.1957	<p><b><u>SECTION – IX – Rights and Concessions.</u></b></p> <p><b><u>(A) Rights and Concessions.</u></b></p> <p><b>36.</b> The Rights &amp; Concessions are regulated by rules &amp; regulations framed during durbar administration for each Ex-state &amp; declarations made by Ex-Rulers from time to time. They are different in each ex-state and are dealt with separately in the following paragraphs.</p> <p><b>37.</b> No right exists.</p> <p><b>38.</b> The following concessions have however been allowed in the Narsinghpur State Project Rules, 1933 &amp; declaration made by the ex-ruler vide extraordinary gazette dated 4<sup>th</sup> August, 1947.</p> <p><b>39. <u>'A' class Reserves – (Rule 15, 16 &amp; 17 of Narsinghpur Forest Rules, 1933).</u></b></p> <p>The cess paying tenants and the aboriginal tribes are allowed to collect edible roots, fruits, creeper dry fuel and such items of minor Forest Produce as have not been leases out, free of payment for their own personal consumption. They are allowed to take bamboos at half the royalty rate and timber of reserved species at full rate from the current</p>
	Nuagarh	10550.00	-do-	

				couples of the year. Grazing is allowed for all kinds of cattle excepting sheep & goat on payment of grazing fee.
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**Tribal custom:-**

People of Kandha tribe are seen in villages like Matia sahi of Purunakote, Dhipisahi, Malasapadar, Purunapani and many other places. They observe a festival called KARMA on Bhadrab Shukla Ekadashi. They also observe PUSHA PUNEI ceremoniously. On southern side of river Mahanadi the tribal people congregate near a deity “ PANTHEI THAKURANI” in Mahanadi RF comp. no. 8. They sacrifice ram (male goat) and chicken before the deity, consume country liquor and organize a feast in the night. Both male and female folk celebrate separately and spend night separately. Now a days they are organizing operas and theaters near the deity. In the next day early morning they return to their villages.

Marriages in Kandha community are very much peculiar. The system prevails is marriage by elopement. The eligible boy kidnaps the desired girl from her village and bring her to his house and keeps for some days with his family. Then the girl is allowed to go back to her house and negotiation follows. If marriage is settled, the groom has to pay the Bride Price in shape of goat, chicken, clothes and money. Then marriage takes place in the house of the groom.

#### **4.1.3 The state of people's economy vocation land use, use of forest, and non-forest based natural resources by people and season patterns.**

The general state of people's economy within the sanctuary are very bad. Not much importance has been given for their economic upliftment. The people resort to one time agriculture in a year, as the agriculture is rain fed. Paddy is the principle crop. In some areas people do sugar cane. Rarely two crops are raised. People leave the land fallow for the rest of the year due to lack of irrigation facility. Drought situation is inherent due to configuration of the land and geology. However the soil in the valleys and in plain areas within and around the sanctuary is very fertile due to deposition of humus layer.

People go for paddy as the principal crop as it is the staple food. People also cultivate some sugarcane as cash crop. The pulses and oilseed raised comprises of Groundnut, Sunflowers, Blackgram, Greengram, Horsegram, Arhar, Mustard and Seasamum. Few people grow vegetables like bringal, tamato, cabbage, cauliflower. Cultivation of citrus is most common in Pampasar area. People often go out of their villages to coastal area as labourers. Some people resort to bamboo artisan job as Salia and Daba bamboo are plentifully available. Fishing is mostly confined to people staying in villages along river Mahanadi. Forest is the part and parcel of most of the people living within and adjacent to sanctuary.

#### **4.1.4 Implimentation of land use and resource dependency for the conservation of the P.A.**

The present land use is not sustainable for the conservation of the PA, viz. people in Angul district side mostly go for cultivation of Brinjal and tomato by using high input. They use chemical fertilizer, insecticide profusely which is inimical to soil fertility and productivity, rendering the soil unfit as there is no biodegradation of chemicals. The soil also is being rendered barren as soil micro fauna dies. Similarly cultivation of paddy in summer exhausts more ground water resources as water requirement and irrigation requirement of paddy is highest. It will be better, if more water is conserved by different soil and water conservation measures.

Every year, people set fire deliberately to the forests during the summer, to get good flush of kendu leaf and for collection of mahua flower which causes immense damage to forest and wildlife. People want the burnt forest materials to be washed away and enrich their cultivated fields on the foothill side. Similarly fishing reduces the food for the muggers and crocodiles in river Mahanadi. The grazing and browsing by the village cattle cause shortage of forage for the wild animals and sometimes spread castle diseases among the wild animals.

In brief the present land use and resource dependency of villagers is not sustainable for long term conservation of Satkosia.



#### **4.1.5 Forest / PA Management practices and their implications to People.**

People often consider creation of sanctuary has restricted their access to the various resources of the sanctuary. Previously a lot of coupe working of timber and bamboo was going on inside the sanctuary and the people were getting employment for nearly six months in a year earning their livelihood. Now all the coupe working, collection of NTFP has been stopped, thereby rendering the villagers unemployed. Sanctuary rules were enforced rigidly and departmental works were curtailed drastically due to paucity of funds. There is fewer funds available to provide alternate work to people through habitat improvement measures or any such allied conservation activities. This has created a gap between P.A. Management and People.

#### **4.2 The development programmes and conservation issues.**

**4.2.1** A few developmental works is being taken upon in and around the sanctuary by the Government which is quite insignificant for the villagers in the process of their economic upliftment. Mostly the works are implemented through Panchayat funded by D.R.D.A.

There are few N.G.Os working in the sanctuary area. The NGO namely FES (Foundation of Ecological Security) headquarters at Angul is doing some work for livelihood support in Tainsi area of Satkosia WL Division .

The list of schemes being undertaken by DRDA are :

1. SGRY
2. MPLAD / MLALAD
3. EGS (Employment Generation Scheme)
4. I.A.Y. (Indira Awas Yojana)
5. Rural Sanitation Programme

**4.2.2. The interplay of market forces and their impact on the subsistence economy of the local people.**

Taking the poor condition of the people living inside the sanctuary area certain external market forces have come in to prominence. For cultivation of Brinjal, tomato, the cultivators have been encouraged by out side market forces providing loan facilities to purchase hybrid seeds, insecticide and Chemical fertilizers. Omfed has come up in development of dairy sector in the sanctuary; loan of hybrid varieties of cows, opening of milk points for purchase of milk from the farmers. Also the people are encouraged to rear more cattle.

**4.2.3. Summary of problems faced by people that affect the management of the P.A. and the ZI.**

**A. Natural Factor.**

1. Rain-fed agriculture.
2. Inaccessibility and remoteness of area.

**B. Social Problems.**

- (i) Poverty and increase in population.
- (ii) Illiteracy.
- (iii) Poor health facility especially Malaria.
- (iv) Mal nutrition.
- (v) Lack of awareness.
- (vi) Lack of alternative employment opportunities.
- (vii) Poor infrastructure.

**C. Problems due to Sanctuary.**

- (i) Denial of access to resources (NTFP, Fuel wood, fodder, Grazing, Medicinal plants etc.)
- (ii) Stoppage of forestry operations, coupe working of timber, bamboo working etc. leading to loss of employment opportunity.
- (iii) Human and Wildlife conflict.
  - Crop raiding by wild animals.
  - Cattle kill by large carnivores.
  - Human injury by wild animals.

**Quantity of crops damaged and the economic loss :**

Annually the loss caused due to elephants in Tikarpara section of Tikarpara Wildlife Range is given below, village wise.

Tikarpara	25 bags
Hatibari	100 bags
Ramimunda	75 bags

N.B: Each bag of paddy weights 75 kg approximately.

At least 20% of the standing paddy crop is damaged mostly during harvest season, out of which 10% is trampled and rest 10% is consumed by elephant.

Similarly in Baghamunda Section, Purunakote section of Purunakote Range, in Kumuri section of Pampasar range, Katrang section of Jilinda range the following paddy crop is lost due to elephant depredation annually.

Baghamunda	50 bags
Purunakote	50 bags
Kumuri	50 bags
Asanbahali	60 bags
Katrang	50 bags
Siaribhundi	50 bags
Kushakhali	50 bags

In Tulka section of Purunakote range and Raigoda village of Raigoda range, in Labangi and Bolong villages just on sanctuary border, the loss of paddy crops due to elephant depredation is around 50 bags in each village. However during summer elephants feed on mangoes, ripe jackfruits in these villages.

In Siaribhundi village of Jilinda Range, the elephants also damage sugarcane crops during January and February. No report has been received regarding house raid by the elephants inside Satkosia Sanctuary. However occasionally lone tuskers have ventured in to barnyards where harvested paddy crop is stored for some time. During harvest season, the farmers watch the crops during night; drive away the lone or elephant groups by torches, mashals, beating of drum.

## **PART – II**

### **PROPOSED MANAGEMENT**

#### **CHAPTER – 5**

##### **PLAN OBJECTIVES AND PROBLEMS**

###### **5.1 THE VISION**

Satkosia Gorge Sanctuary is the second Project tiger of Orissa and the heart of Mahanadi elephant reserve . Having a very high bio diversity index, it is famous for its deep gorge, steep terrain with dense forest with close canopy, banyan trees, Teak plantation , besides wide diversity of wild fauna.

This sanctuary was notified in 1976 to protect habitat of gharial and mugger. Now it has been proposed to declare the sanctuary as a Tiger Reserve as it is one of the best Tiger habitat and rich in its prey base like Gaur, Sambar, Chital and Barking deer population. The sanctuary is to be protected and managed to conserve this flag ship species in all its splendor. Enough breeding space with plenty of prey base will be the key. Satkosia is the best habitat for elephant in Mahanadi elephant reserve. Poaching for tusk is the only threat to the tuskers. Protection against poaching will be strengthened. The elephant corridor will be restored, connecting to Kapilas on eastern side and Rairakhol and Sambalpur on the western side . The sanctuary boundary will extend over adjoining elephant habitat for imposition of stringent legal provision..

The Mahanadi gorge will be the undisturbed habitat for gharial and mugger. fishing and traffic in river Mahanadi will be regulated. Nesting sites will be protected. Compact canopy is to be maintained to facilitate long range movement of giant squirrel population. Forest cover in degraded areas needs to be restored with ficus and other fruit bearing trees for supporting avi-fauna.

The key areas, mesic sites, critical habitats ,Red Flag zones will be identified and maintained at any cost.The sanctuary will also be made free from all possible threats like fire, grazing, illicit felling, poaching etc. in order to maintain the biodiversity and conserve the key species of the sanctuary.

Dependency of people in and around the sanctuary is to be reduced to a great extent. People will be provided with alternate livelihood options. Eco development activities will be under taken to reduce the dependency and to uplift the socio-economic status of the people through innovative micro enterprises.

Infrastructural development will be made to support ecotourism. Green rating will be maintained. Rest houses and dormitories will be developed. Better interpretive services will be provided. Religious places, scenic spots, sites of cultural heritage will be included in ecotourism for environment education and feeling of wilderness maintained. Satkosia will not only attract the local picnickers but also the foreign tourists and nature lovers.

Satkosia will be a learning centre and field for research activity, study of biodiversity, behavior and biology of wild animals , wild life management and habitat ecology for students/researchers of all over country.

## **5.2. Objectives of Management**

**Goal** - To conserve the biodiversity in the sanctuary in general and along the Mahanadi Gorge and its adjoining landscape in particular with active support of the local community.

## **Objectives**

### **Priority – 1**

1. To restore and conserve a viable population of endangered Gharials and Muggers in Mahanadi gorge ecosystem.
2. To maintain the biodiversity with special emphasis on maintaining the viable population of Tiger and Elephant.
3. To enhance the catchment capability to increase water availability.

### **Priority – 2**

4. To relocate identified villages and to reduce dependency of local communities on the forests and to mitigate the Man – Wildlife conflict.
5. To promote ecotourism for alternate livelihood support of the local community.

### **Priority – 3**

6. To build cooperation of staff and people for effective management.

### **5.3. Problems in achieving the objectives:**

1. Illicit felling and smuggling.
2. Poaching
3. Over fishing
4. Grazing
5. Excessive human settlement
6. Inadequate staff
7. Forest Fire.

8. Scarcity of water during summer
9. Invasion of weeds.
10. Human – Wildlife conflict.
11. Fragmentation of elephant habitat and loss of corridor links.
12. Poor socio-economic condition of people.
13. Inadequate training.
14. Lack of adequate Research and inventories.
15. Dependency of people on the sanctuary.
16. Inadequate infrastructures.
17. Lack of awareness.
18. More soil erosion.
19. Non-availability of land for relocation.
20. Poor health service to staff, less amenities.

#### PROBLEM MATRIX

Degree of Problems :	High	(H)	= 3
	Medium	(M)	= 2
	Low	(L)	= 1
Weightage for Priority:		P <sub>1</sub>	= 3
		P <sub>2</sub>	= 2
		P <sub>3</sub>	= 1



**PROBLEM MATRIX**  
**OBJECTIVES**

Degree of Problems : High (H) = 3 Medium(M)= 2 Low (L) = 1  
 Weightage for Priority: P<sub>1</sub> = 3 P<sub>2</sub> = 2 P<sub>3</sub> = 1

Sl No	Problems	P <sub>1</sub>				P <sub>2</sub>				P <sub>3</sub>		Weighted score of the problems in achieving objectives			
		To restore & conserve a viable popl. of crocodile	To maintain representative Bio-diversion	To enhance catchment capability	To relocate identified Villages	To promote environment Education.	To build capacity of staff and people								
1	Illicit felling and smuggling	M	6	H	9	H	9						24	4	
2	Poaching			M	6								6		
3	Uncontrolled / over fishing	M	6										6		
4	Livestock grazing			H	9	M	6						15	11	
5	Excessive Human settlement			H	9			H	6				15	12	
6	Inadequate staff	L	3	H	9					H	6	H	3	21	7
7	Forest fire			H	9	H	9						18	8	
8	Scarcity of water in summer			H	9								9	16	
9	Invasion of weeds			M	6								6		
10	Human-Wildlife conflict			M	6			H	6				12	14	
11	Fragmentation of elephant habitat and corridor			M	6			H	6				12	15	
12	Poor socio-economic condition of people			H	9			H	6	M	4		19	13	
13	Inadequate Training	M	6	M	6	L	3	M	4	H	6	H	3	28	2
14	Lack of adequate Research & inventories	H	9					M	4	H	6	H	3	22	6
15	Dependency of people	M	6	H	9	M	6	H	6				27	3	
16	Inadequate infrastructure							H	6	H	6	H	3	15	9
17	Lack of Awareness	H	9	H	9			H	6	H	6	H	3	33	1
18	Soil erosion			M	6	H	9						15	10	
19	Non availability of land for relocation							H	6				6		
20	Poor health service to staff and less amenity.	H	9	H	9					L	2	M	2	22	5

Analysing the problem Matrix the major problems are listed below as per their priority or ranking.

Rank	Problem	Weight and score
1	Lack of Awareness	33
2	Inadequate Training	28
3	Dependency of People	27
4	Illicit felling and smuggling	24
5	Poor health, amenity of staff	22
6	Lack of Research and inventory	22
7	Inadequate staff	21
8	Forest Fire	18
9	Inadequate infrastructure	15
10	Soil erosion	15
11	Live stock grazing	15
12	Excess human settlement	15

So strategies are being made to solve the above major problems on priority basis so as to achieve our goal.

Besides the priority sector, other minor problems are to be solved as supplementary strategy to achieve our goal.

The list of minor problems on priority basis are –

1	Poor socio economic condition of people	13
2	Human – wild animal conflict	12
3	Fragmentation of elephant habitat	12
4	Scarcity of water	9

## CHAPTER – 6

### THE STRATEGIES

#### **6.1. Boundaries.**

As it has been discussed in Chapter 2, the boundary condition of the sanctuary is very poor. There is no maintenance for long since. Maintenance of external and internal boundaries has to be taken up on top most priority. Action has already been taken for pillar posting along the sanctuary boundary after due survey.

##### **6.1.1 External Boundaries**

Around 110 kms. of external boundary run through the boundaries forest and revenue village limits. Clearance of under growth shrubs and poles are to be done on a width of 30 meters keeping the boundary pillars on the middle of the cleared line.

Around 105 kms. of external boundary run along the road, river, revenue villages. So clearance of under growth is not required. The RCC pillars are to be posted at proper places where the old ones are found or have been damaged or absent. RCC pillars need to be posted at every turning of the boundary line. Besides these, intermediate pillars of different dimension are to be posted at every 100 mtr. interval.

RCC pillars will be posted at suitable places where materials can be easily transported and water is available for proper curing. In the extreme cases where the boundary line passes on hill top or remote places, stone cairns may be erected in place of RCC pillars.

### 6.1.2.The Size of RCC Pillar

9" x 9" x 2' 6" with 3" footing on either wings on bottom side. 1'.6" of the pillar is to be seen above the ground level after erection.

### Size of Cairns

Cairn height	..	0.75 mtr.
Base diameter	..	1.20 mtr.
Top diameter	..	0.75 mtr.
Length of Central Pole:		
Below ground	..	0.50 mtr.
Inside stone	..	0.75 mtr.
Above cairn	..	<u>0.50 mtr.</u>
Total height		1.75 mtr.

The cairns are to be made of loose boulder packed with filling of earth in void space. First layer of the boulder will be given in a ring shaped foundation in trench of 1 ft. depth. The central pole is to be preferably a sal pole whose girth will be 1'.6" to 2'.0" .

### **6.1.3. Colouring and numbering.**

Both the RCC pillars and top of the pole of the cairns are to be painted with 'Corbet Brown' colour oil painting to make it water proof and camouflaging with the surroundings.

Pillar serial number, starting with SE corner as pillar no 1 and moving in anti clock wise direction, and longitude / latitude of the place are to be written on the pillar / post with white colour paint.

### **6.1.4. Quantum of work.**

1. Boundary clearance on a width of 30mtr, for 110 Kms.
2. Pillar posting at every 100 mtr. interval on 215 Kms length. Number of pillars are to be 2150 no (approximately). They are to be posted after proper survey.

The work is to be completed within first 2 years of execution of this plan..

### **6.1.5.GPS reading.**

After completion of survey, pillar posting and numbering a field book will be prepared where GPS location of each pillar, number chainage and bearing will be recorded.

### **6.1.6. Internal Boundary Maintenance.**

RF and its compartments shall be demarcated clearly with pillars. Rather it is much more essential to mark the boundary lines of cluster of villages found

inside the sanctuary. There are 99 revenue villages and 3 forest villages inside the sanctuary. The boundary length of cluster of some villages come to 322 kms. Those can be treated as internal boundaries.

Though clearance of internal boundary is not that much important, posting of pillars on the line is highly required to avoid encroachment of habitation.

Similar steps are to be followed as has been done in case of maintenance of external boundary lines.

#### **6.1.7. Quantum of work.**

No. of pillars	3200 Nos.
Survey demarcation of	322 Kms.
(Pillar construction, carriage, posting, colouring, numbering of pillars)	

The work will be executed within 3 years of execution of this plan.

#### **6.1.8. Ecological Boundary.**

The flagship species like Tiger and Elephant never restrict themselves within the territorial boundary of Satkosia Gorge Sanctuary. They cross the boundary in search of food and mates. It is also reported that the elephants of Satkosia Range move to adjoining Forest Divisions like Athgarh, Athmallik, Angul, Dhenkanal, Boudh and Nayagarh. Where as, the ecological boundary of all other species is confined to that of Buffer zone.

### **6.1.9. The description of Buffer zone is given below:**

#### **BOUNDARY DESCRIPTION**

The outer boundary of the buffer zone starts from the meeting point of Suhagi nalla in the river Mahanadi in Cutack District, moves in north ward direction till it meets Maradamukha village boundary. Then it runs along the southern & eastern boundary of that village till it reaches the boundary of Sisupathar P.F. Then it follows the southern boundary of Sisupathar P.F. on north-east direction till it meets Balikiary RF. Then it follows the southern boundary of Balikiary RF, Nuagarh R.F. till it meets the inter-district boundary of Cuttack and Dhenkanal. Then it runs northwesterly direction along the Northern boundary of Nandinia R.F. of Dhenkanal District, northern boundary of Nuakheta R.F. of Angul District till it meets Nukheta Revenue Village. Then it follows the northern boundary of Nuakheta Revenue village, Northern boundary of Balong R.F. on westward direction. Then follows northern boundary of Bhogapal R.F., northern boundary of Hidisinga Revenue village, then follows northern boundary of Krushnachakra R.F. Then follows the northern boundary of Kulsar Revenue village, then northern boundary of Krushnachakra R.F. till it meets eastern boundary of Tabada R.F. Then it follows the southern boundary of Tabada R.F. northwesterly direction till it meets the sub-division boundary of Athamallik Sub-Division. Then it runs along the sub-Division boundary on southwesterly direction till it meets Hatidhara R.F. boundary of Athamallik Division. Then it follows the northern, western and southern boundary of Hatidhara R.F. till it meets the Chanagudi nalla.

Then it follows the western boundary of the sanctuary. Then it follows the southern boundary of sanctuary till it meets the inter-district between Boudh and Nayagarh District. Then it follows the northern and eastern boundary of Baisipalli R.F. till it touches the road between Badasilinga to Makarprasad where it runs easternly along the southern boundary of Makarprasad R.F. up to Champadali village. Then it follows the Brutang nalla on easternly direction till it meets river Mahanadi where it crosses the river Mahanadi and reaches the starting point at Odasinga nalla.

**The following villages are coming under the Buffer Zone:**

Name of the village	District	Division	Area ( in Ha.)	Population	Year of settlement
Barabhaya	Cuttack	Athagarh	199	414	1995
Kusal	Cuttack	Athagarh	92	09	1995
Balikiary	Cuttack	Athagarh	188	291	1995
Chakamunda	Cuttack	Athagarh	314	1269	1995
Sisupathar	Cuttack	Athagarh	398	546	1995
Maradamukha	Cuttack	Athagarh	198	558	1995
Kharuani	Cuttack	Athagarh	26	108	1995
Marudiha	Cuttack	Athagarh	25	72	1995
Nuakheta	Angul	Angul	1045	1417	1962
Balanga	Angul	Angul	227	1149	1962
Talasira	Angul	Angul	186	458	1962
Labangi	Angul	Angul	230	70	1962
Pampasar	Angul	Angul	172	171	1962
Hidsing	Angul	Angul	270	296	1962
Hinsrida	Angul	Angul	156	269	1962
Burti	Angul	Angul	247	366	1962
Jagannathpur	Angul	Angul	689	1171	1962
Tainsi	Angul	Angul	1071	1724	1962
Kamarsahi	Angul	Angul			1962
Kumuri	Angul	Angul	174	412	1962
Tendulipada	Angul	Angul	128	76	1962



Hinjagola	Angul	Angul	207	281	1962
Kulsar	Angul	Angul	155	264	1962
Krushnachakra	Angul	Angul	235	242	1962
Laimunda	Angul	Angul	76	124	1962
Baghmunda	Angul	Angul	417	236	1962
Hinjadoli	Angul	Angul	131	188	1962
Nuapada	Angul	Angul	326	580	1962
Olaberi	Angul	Angul	91	132	1962
Kantabeda	Angul	Angul	390	527	1962
Baragotha	Angul	Angul	281	198	1962
Badataila	Angul	Angul	75	235	1962
Bhagatpur	Angul	Angul	186	557	1962
Dandasinga	Angul	Angul	98	281	1962
Lakshmanpur	Angul	Angul	133	458	1962
Bhalumunda	Angul	Angul	78	127	1962
Ganjada	Angul	Angul	760	1146	1962
Kadaliberini	Angul	Angul	97	401	1962
Kothabhuin	Angul	Angul	565	902	1962
Sankrida	Angul	Angul	204	124	1962
Dalaki	Angul	Angul	155	219	1962
Dalasinga	Angul	Angul	224	583	1962
Thukuli	Angul	Angul	89	0	1962
Hinsaloi	Angul	Angul	70	59	1962
Sorispala	Angul	Angul	68	150	1962

Khalisahi	Nayagarh	Nayagarh	173	138	1985
Khajuridiha	Nayagarh	Nayagarh	89	125	1985
Champadali	Nayagarh	Nayagarh	139	167	1985
Siligadi	Nayagarh	Nayagarh	167	117	1985
Raimara	Nayagarh	Nayagarh	276	285	1985
Tulikutapia	Nayagarh	Nayagarh	83	62	1985
Sakin	Nayagarh	Nayagarh	114	43	1985
Dhipasahi	Nayagarh	Nayagarh	101	185	1985
Kendudhipi	Nayagarh	Nayagarh	42	0	1985
Gergedi	Nayagarh	Nayagarh	59	57	1985
Purunapani	Nayagarh	Nayagarh	59	89	1985
Gochhabari	Nayagarh	Nayagarh	163	244	1985
Dhupaju	Nayagarh	Nayagarh	106	133	1985
Badasilinga	Nayagarh	Nayagarh	328	481	1985
Sikhargochha	Nayagarh	Nayagarh	134	177	1985
Janakjhola	Nayagarh	Nayagarh	22	12	1985
Khalighati	Nayagarh	Nayagarh	348	134	1985
Janisahi	Nayagarh	Nayagarh	69	79	1985
Sansilinga	Nayagarh	Nayagarh	44	8	1985
Dumduma	Nayagarh	Nayagarh			1985
Tailasahi	Nayagarh	Nayagarh			1985
Parhasahi			7929	11038	
Total			7927		

**The following Forest Blocks are coming under the Buffer Zone:**

Name of the Forest Blocks	District	Division	Area ( in Ha.)
Balikiary RF	Cuttack	Athagarh	5460
Sisupathar PF	Cuttack	Athagarh	
Nuagarh RF	Cuttack	Athagarh	4220
Nandinia RF	Dhenkanal	Dhenkanal	641.85
Nuakheta RF	Angul	Angul	3000.8
Balonga RF Cpt.No.1 to 10 ,13	Angul	Angul	3040.23
Kumuri RF	Angul	Satkosia (WL)	337.52
Kumuri R.F.	Angul	Satkosia Wildlife	337.52
Bhogapal RF	Angul	Angul	184. 72
Labangi DPF	Angul	Angul	69.78
Krushnachakra RF	Angul	Angul	2515.8
Hatidhara RF Cpt.No.1 to 22	Angul	Athamallik	5938.81
Makarprasad DPF	Nayagarh	Nayagarh	1152.5
Total			10014.41
Total buffer area			17941.41 Ha. 179.41 Sq. Kms.

Therefore it is suggested to extend all the treatments of this Management Plan to the Buffer zone of the sanctuary area is for long term conservation of the flagship species.

Linking habitats through Corridor, habitat improvement, protection measures, water availability and eco-development work can be taken up outside the sanctuary boundary in Buffer zone in addition to the Core zone. The quantum of work is being dealt with in the thematic plan.

#### **6.1.10. Ecological Boundary:-**

The ecological boundary of most of the wild animals of the sanctuary is beyond its notified boundary. The forest areas in buffer zone so described in the Chapter-6 is mostly used by the wild animals. Therefore, it is suggested to extend the existing sanctuary boundary to the adjoining Reserved Forests of Athagarh, Dhenkanal and Angul Forest divisions. Similarly source of the peripheral villagers now existing within the boundary of the sanctuary need to be carved out from the sanctuary. Therefore, the sanctuary boundary require rationalization by a fresh notification of the Govt. of Orissa. The draft notification for boundary rationalization for boundary rationalization is given below. The map is also enclosed in the plan.

### **Rationalization of sanctuary boundary**

#### **CUTTACK DISTRICT.**

The boundary line of the sanctuary in the south east starts from the middle of the river Mahanadi near Baliput ferry ghat of Cuttack district which runs towards north along the eastern boundary of the Judum RF block

II & then that of Judum RF block-I till it meets the inter dist. boundary between Angul & Cuttack dist. Then it follows the same inter district boundary till it touches northern boundary of Barabhaya revenue village. Then it runs along the eastern boundary of Barabhaya revenue village excluding the revenue villages like Barabhaya, Kushal and Balikiari, it runs along southern boundary of Balikiari village and then follows the forest road from Balikiari to Sissupather till it touches Balikiari R.F. boundary. Then it runs towards south, then eastward along Balikiari RF of Athagarh Forest Division till it meets Nuagarh RF line near village Khola. Then it follows the eastern boundary of Nuagarh R.F. till reaches boundary of Kharuani village. Then it follows southern, western and northern boundary of Kharuani village to exclude the village from sanctuary till it reaches again the Nuagarh R.F. boundary. Then it follows the southern boundary line of Nuagarh RF till it meets the inter dist boundary of Dhenkanal & Cuttack dist. Then it turns westerly and runs along the said inter-district boundary till it reaches the trijunction point of three district namely Angul, Dhenkanal, and Cuttack.

### ANGUL DISTRICT

The North-Eastern boundary of the sanctuary follows through the trijunction point of three districts namely Dhenkanal, Angul & Cuttack towards north along the Nuakhetta R.F. boundary including the R.F. till it meets Bolang RF boundary. Then it runs the northern and western boundary of Bolong R.F. ( including it) till it reaches Jocub R.F. Then it follows the eastern boundary of Jocub RF till it touches Takarsinga RF boundary near Pampasar village. The northern boundary of the sanctuary follows the boundary of Takarsinga RF till it touches Chhotamunda RF near Satbhenia nala. Then it runs along the north-eastern boundary of Chhotamunda RF, eastern boundary of Tainsi RF, northern boundary of Tainsi RF & Kumuri

PF, western boundary of Tainsi RF till it reaches Baghamunda RF near Baghamunda village. Then it follows eastern & western boundary line of Baghamunda RF till it reaches Majhipada RF boundary. Then it follows the Chanagudi nala (within Hatidhara RF) in southward direction till its meets southern boundary of Hatidhara RF near village Nilamara. Then it continues with the southern boundary of Hatidhara RF till it meets the bank of river Mahanadi. Then it runs westward along the bank of river up to Olatha ferry ghat where it crosses the river Mahanadi & reaches at Harabhanga ferry ghat of Boudh district. 11 revenue villages, as follows, have been ringed out to form Buffer area of the sanctuary.

Sl. No.	Name of village	Area in Ha.	House hold	Population
1.	Purunakote	358	171	766
2.	Gopalpur	141	83	316
3.	Chhotkei	235	93	434
4.	Tulka	204	94	455
5.	Majhipada	386	37	170
6.	Behera sahi	238	37	177
7.	Gaindi	83	66	308
8.	Karadapada	149	98	415
9.	Hatibari	282	92	443
10.	Tikarpada	152	180	684
11.	Katrang	317	69	276

Also 3 Forest villages viz. Tarava, Asanbahali and Bhurkundi will be inside the sanctuary as Buffer, as they are inside the R.F. areas. Further more, 3 Revenue villages namely Raigoda, Badakheta & Salor will be ringed out, to be relocated later on.

Sl. No.	Name of village	Area in Ha.	House hold	Population
1	Badakaheta	90	24	100
2	Salor	124	19	90
3	Raigoda	172	31	185

### BOUDH DISTRICT

The western boundary of the sanctuary runs from Harabhanga ferry ghat along the Mahanadi river bank eastward till it reaches Padmatola RF near Kankei temple. Then it runs along the western boundary of Padmatola RF, northern boundary of Arakhapadar RF till it reaches Badajore nala. It goes along the Badjore nala till it crosses the southern boundary of Arakhapadar RF near Nandagadu village. Then it follows the southern boundary of Arkhapadar RF towards east till it meets the inter-district boundary of Boudh & Nayagarh district and follows the same till it meets Mahanadi R.F. One revenue village i.e. Marada which is included within the sanctuary will be ringed out, to be relocated later on.

Name of village	Area in Ha.	Total house hold	Total Population
1. Marada	29.94	14	57

### NAYAGARH DISTRICT

The southern boundary of the sanctuary starts from the inter district boundary between Boudh & Nayagarh, place in between Padmatola dam & Bankajhari village and runs along the southern boundary and then eastern

boundary of Mahanadi RF till it meets Chhamundia PRF excluding revenue villages namely Sagadabhanga and Malasapadar. Then it runs along the eastern, northern and western boundary of Chhamundia PRF and then westward along the eastern & northern boundary of Mahanadi R.F. up to end of Bethiasahi village, where it crosses the river Mahanadi along the Bethiasahi- Baliput (Cuttack district) ferry route and joins the Baliput ferry ghat. Following 6 revenue villages are included in sanctuary and will be ringed out to be relocated in future.

Name of village	Area in Ha.	Total house hold	Total Population
1. Kuturi	119	20	89
2. Bahali	37	-	-
3. Badmul	288	13	53
4. Salapaganda	11	7	41
5. Musugurha	13	5	25
6. Malisahi	-	-	-

Areas on both sides of Pampasar –Tikarpada P.W.D. road coming within the limits of the sanctuary up to 1 chain width on either side of middle of the road.

## **6.2. Zonation and Zone Plan.**

### **ROCE ZONE**

The total geographic area of the Satkosia Gorge Sanctuary, 795.52 Sq. Km, has been taken as the core zone out of which Mahanadi Gorge occupies 30.1 Sq. Km. and villages occupy 137.622 Sq. Km.



It is proposed to divide the Satkosia Gorge Sanctuary (Core Zone) in to 4 distinct zones without any overlapping, so as to treat the zones with specific strategies. The name of zones, their areas are given below.

	Sl. No.	Name of Zone	Extent of area in Sq.Km.
CORE ZONE	1.	Wilderness Zone	565.078
	2.	Eco Development Zone	183.746
	3.	Eco Tourism Zone	44.972
	4.	Restoration Zone	<u>1.724</u>
		Total	795.52
BUFFER ZONE	1.	Wilderness Zone	100.14
	2.	Ecodevelopment Zone	<u>79.27</u>
		Total	179.41

#### **6.2.1. Sub-Plan for Wilderness Zone.**

##### **6.2.1.1. Constitution of the Zone.**

The Wilderness Zone of the Satkosia Gorge Sanctuary will include entire core area including Mahanadi River portion excluding the areas earmarked for Revenue villages, Forest villages, Eco tourism Zone, Eco Development Zone and Restoration Zone and forested areas in buffer zone. Total area of wilderness zone is 565.078 Sq. Kms. in core + 100.14 Sq. Km. in Buffer zone = 665.22 Sq. Kms.

The Zone is shown in the Zone Map annexed in the Plan.

### **6.2.1.2. Past Management in the Zone.**

In A.K.Mishra's Management Plan, the Zonation was not clearly defined though there was a zone namely Wilderness Zone. The prescriptions given under this zone and their extent of implementation is as follows:

1. Water Resource Development activities like construction of water storage structures, WHS, check dams and percolation tanks .
2. 2 Monitoring of animals- Conducted during monitoring of Tiger, copredators, herbivores etc. during Jan 06 last.
3. Animal health surveillance - Vaccination work to all domestic cattle in the villages inside the sanctuary are being taken up regularly.

### **6.2.1.3. Specific Objectives under broad objectives.**

#### **Broad objectives.**

1. To restore and conserve a viable population of endangered Gharial and Mugger in Mahanadi Gorge Eco system.
2. To maintain representative biodiversity with special emphasis on maintaining the viable population of Tiger and Elephant.
3. To enhance the catchment capability to increase water availability.

## **Specific Objectives.**

- (i) To check gill net fishing and over fishing.
- (ii) To check illegal transit of timber in raft through river.
- (iii) To ensure complete protection against forest fire.
- (iv) To ensure complete check on illegal killing of elephants and poaching of other animals.
- (v) To stop unsustainable practices
- (vi) To regulate grazing.
- (vii) To take up minimum restorative management interventions.
- (viii) To take up soil and moisture conservation activities.
- (ix) To ensure water availability by artificial means.
- (x) To develop synergy between activities of different departments.
- (xi) To build up peoples' stake holding.
- (xii) To coordinate and converge different sectoral programmes in the area to achieve the goal of conservation.
- (xiii) To enhance Ecosystem services.

#### 6.2.1.4. **Prescriptions of Activities.**

The Wilderness zone is really a red flag area which needs complete protection against grazing, fire, illicit felling, poaching, fishing etc. The management intervention will be minimum so as to achieve the objectives. Only restorative developmental activities will be done for the advantage of wild animals especially for Tiger and its prey base.

Following activities will be done to overcome the problems identified earlier to achieve the specific objectives.

#### **6.2.1.4. Mahanadi River Squad.**

The Mahanadi River Squad (MRS) is functioning properly as desired in controlling movement of illicit forest produce. Its activity needs to be further strengthened. Tikarpara, Baliput, Badamul, Chhamundia, Sitalapani are the strategic places where squads will be stationed. All the party will be provided with motor launches / boats. They will be provided with search lights, VHF hand sets and arms and ammunitions. Their main function is to check illegal entry of boats into the gorge and checking illegal fishing, transport of timber, kendu leaf, bamboo from the sanctuary. The MRS will watch the nesting sites of the crocodiles on river bank during nesting season i.e. during May and June. The eggs will be prevented from predation by domestic dogs, pigs and human beings. All the squads stationed at different places will have better coordination among themselves to strengthen their work.

**Works:-**

1. Engagement of daily wage driver and assistant in all the 5 motor launches from July to November = 5 months.
2. Maintenance of 5 motor launches every year.
3. Purchase of VHF handsets, batteries, search light, guns and cartridges and supply of uniforms to daily wage staff.
4. Provision of POL for all the motor launches / boats to run round the year.

**6.2.1.4.2. Fishing Regulation.**

- (i) Limited fishing permit will be issued by the D.F.O. to the local traditional fishermen to catch scaly fish with hook and bait (Floating baits) or by angling only as per permission laid in Chapter V-A of the Wildlife (P) Orissa Rules 1974.
- (ii) In no case throw nets or gill nets will be allowed. Large baited hooks which are likely to endanger the Gharial and Mugger shall not be allowed.
- (iii) Fishing be closed during breeding and nesting period of crocodiles.

**6.2.1.4.3. Soil & Moisture Conservation measure.**

Rain water in Satkosia Gorge Sanctuary mostly drains in to the nalas of Mahanadi river basin and to a less quantity in to Brahmani River basin. It is proposed to conserve soil and moisture in only 27 major nalas within Satkosia Gorge sanctuary though nearly one hundred of small nalas are there. 27 nalas are

selected because they are having significant role in conservation of flora and fauna. Such nalas are:

Sl No	Name of nala	River basin	District
1	Bauli nalla	Brahmani	Angul
2	Asanbahal	Mahanadi	Angul
3	Dimiri	Mahanadi	Angul
4	Khalkhala	Mahanadi	Angul
5	Purunapani	Mahanadi	Nayagarh
6	Nandini	Mahanadi	Angul
7	Baniajore	Brahmani	Angul
8	Duhanjore	Mahanadi	Angul
9	Satbhenia	Mahanadi	Angul
10	Sarimother	Mahanadi	Angul
11	Ghoda Pathar	Mahanadi	Angul
12	Kurut garh	Mahanadi	Angul
13	Chupu	Mahanadi	Angul
14	Ramagaon	Mahanadi	Angul
15	Ramkut	Mahanadi	Angul
16	Halua	Mahanadi	Angul
17	Bhimdhara	Mahanadi	Angul
18	Satidhara	Mahanadi	Angul
19	Burma	Mahanadi	Angul

20	Khali	Mahanadi	Angul
21	Marada	Mahanadi	Boudh
22	Udandai	Mahanadi	Boudh
23	Sitalpani	Mahanadi	Boudh
24	Nimandi	Mahanadi	Nayagarh
25	Mudligadia	Mahanadi	Nayagarh
26	Shankarjhuli	Mahanadi	Nayagarh
27	Rajing	Mahanadi	Nayagarh

Soil and moisture conservation treatment will be given from ridge to valley. On ridges, vegetative barriers will be provided. On upper slopes loose stone check dams will be constructed. On lower slopes “loose boulder check dams with brush wood covered with wire mesh” will be constructed. In the plains percolation tanks, inverted bandhara will be constructed.

Name of nalla	Brush wood with loose stone ( in nos.)	Gully plugging and loose boulder with wire mesh check dam ( in nos.)	Percolation tanks (in nos.)	Inverted bandhara (in nos.)
Bauli nalla	1000	0500	100	35
Asanbahal	1000	0500	100	20
Dimiri	1000	0500	75	20

Khalkhala	1000	0500	75	25
Purunapani	1000	0500	100	30
Nandini	1000	0500	100	30
Baniajore	1000	0500	100	30
Duhanjore	1000	0500	100	30
Satbhenia	1000	0500	100	30
Sarimother	1000	0500	100	30
GhodaPathar	1000	0500	100	30
Kurut garh	1000	0500	100	30
Chupu	1000	0500	100	30
Ramagaon	1000	0500	100	30
Ramkut	1000	0500	100	30
Halua	1000	0500	100	30
Bhimdhara	1000	0500	100	30
Satidhara	1000	0500	100	30
Burma	1000	0500	100	30
Khali	1000	0500	100	30
Marada	1000	0500	100	30
Udandai	1000	0500	100	30



Sitalpani	1000	0500	100	30
Nimandi	1000	0500	100	30
Mudligadia	1000	0500	100	30
Shankarjhuli	1000	0500	100	30
Rajing	1000	0500	100	30
<b>Total</b>	<b>27000</b>	<b>13500</b>	<b>2650</b>	<b>790</b>

Every year one catchment area will be treated as a whole.

All the above treatments will be given in nalas in catchment to conserve soil and moisture.

**At Higher (Steep) Slopes:.**

**a) Brush wood with loose stone check dam :**

Brush wood check dams will be made at suitable locations. Small stones will be collected locally and kept in between 2 brush wood barriers to check the run off.

**b) Gully Plugging :**

At the origin of the gully i.e. at the gully head, loose stone / boulders will be packed to avoid further erosion at head.

**c) Loose boulder with wire mesh check dam:**

On the bed of nalla and gully, loose boulders will be packed and covered with 4" x 4" size chain link mesh to form a stable check dam. A series of similar check dams will be constructed at 50 – 100 mtr. interval depending upon the steepness of the slopes.

#### **At Mild Slopes.**

**Inverted bandharas :** Where soft rocks are there on both the nalla banks and maximum nalla width is 15 mtr, inverted bandharas can be taken up. The earth and stones are excavated to form a trench across the nalla at 3 ft wide, 4 – 5 ft depth till hard rock appear on bottom. The trench will be filled up with clay soil with compaction. These inverted bandheras will help in arresting ground water flow to downwards.

Where water is available near by, a wall of RR stones masonry in cement mortar may be constructed inside the trench instead of putting clay soil.

#### **Percolation Tanks.**

A cement concrete check dam with RR stone masonry wing walls, abutment, apron for 20 – 30 ft width of nalla will be constructed on nalla bed. It will have weir to allow excess water to go out. A pit dug on upstream side of the percolation tank will allow water to stand for 5' – 6' height.

The design and diagram of the above structures are given in Annexure....

### Proposed Location of Water holes:

(i) **Small water holes:** These types of water holes will be constructed close to the following forest roads which are motorable for tractor and tanker. The location selected should have least biotic interference.

Selected forest roads	Total length (in kms) Appendix-59	No. of water holes
Tulka-Labangi	14.0	3
Chhotkei-Katrang	17.0	8
Pampasar-Raigoda-Lembuchhali	20.6	10
Tulka-Chhotkei-Purunakote	15.0	8
Karadapada-Kandhaida	6.0	3
Purunakote-Baghamunda	9.0	5
Tarava-Kumuri	7.0	4
Tikarapara-Katrang	15.0	5
Karadapada-Kadalikhola	12.0	5
Bipradihi-Karadapada	10.0	8
Tulka-Bhurkundi-Rasanda chhak	17.0	19
Badasilinga-Gergedi	15.0	8
Dhipisahi-Padmatola	10.0	6
Kuturi-Marada	8.0	4
Bhapur-Padmatola	15.0	6
<b>TOTAL</b>	<b>157.6</b>	<b>124</b>

(ix) **Big water reservoirs:**

**CORE ZONE:** The locations are near Takarsingha, Labangi, Majhipada, Hadibasa baro, Baghamunda, Raigoda, Siaribhundi, Jocub, Salor, Karadapada, Sitalapani, Godighati, Marada (Compt. No. 11, 4, 5 of Padmatola RF), Panchakiari, Salap ganda, Purunapani, Bethiasahi, Dhipisahi, (Compt. No. 2, 7, 9, 15, 16 of Mahanadi RF) Compt. No. 2, 4, 15, 17 of Mahanadi RF, Compt. No. 1, 4 of Padmatola RF & in Compt. No. 4 of Arakhapadar RF.

**BUFFER ZONE:** At 2 places in Balikiary R.F., 2 places in Nyagarh R.F. and at once place each in Nandinia R.F. , Nuakheta R.F., Balang R.F. and 2 places in Hatidhara R.F. and Labangi D.P.F.

**6.3.3.2.5 Salt licks :**

All the game tanks must have salt licks near to them. At least 20 such sites will be maintained every year especially during October to June for 8 months. The sites are Hatigija, Pointiri, Kandhaida, Kadalikhola, Ranibandha, Kantarsingha, Takarsingha, Satidhara, Khajurinalia, Routbahal, Padmatola, Sitalpani, Katrang ghat, Nandini nala, Rasanda, Bramhandei, Srota India, Badakheta, Nadapathar, Buchundabhogra, Kuturi, Shankarjhol, Nimandi, Salapaganda, Dhipisahi, Marada & Sunakhania.

**6.3.3.1.1. Vigilance over water holes.**

During summer, every day, the local staff will visit the water holes twice. This will prevent poachers to come to water holes. Every day the water will be tested by smelling or pH will be tested by using litmus paper, if required, to check whether any poisoning is made. It is to be recorded what type of animals are often using the water holes.

#### **6.3.3.1.2. Prevention of domestic cattle.**

Water holes closer to villages are often shared by domestic cattle. They not only compete with the wild animals but transmit infectious diseases to them and contaminate the water of water holes. The staff visiting water holes will see the number of domestic cattle using the water holes from their hoves, dungs etc. Digging of more number of village ponds in nearby villages under Eco-Development activity will prevent the domestic cattle using the water holes meant for the wild animals.

#### **6.3.3.2.5 Salt licks :**

All the game tanks must have salt licks near to them. At least 20 such sites will be maintained every year especially during October to June for 8 months. The sites are Hatigija, Pointiri, Kandhaida, Kadalikhola, Ranibandha, Kantarsingha, Takarsingha, Satidhara, Khajurinalia, Routbahal, Padmatola, Sitalpani, Katrang ghat, Nandini nala, Rasanda, Bramhandei, Srota India, Badakheta, Nadapathar, Buchundabhogra, Kuturi, Shankarjhol, Nimandi, Salapaganda, Dhipisahi, Marada & Sunakhania.

#### **6.2.1.4.4. Grazing control :**

It has already been discussed in Chapter-3 Para- 3.6.4 that there are 35,235 livestock in the villages located inside sanctuary. They all graze inside it and exert tremendous pressure on the forests. They can not be deprived of their rights unless they are relocated. Therefore it is proposed to regulate the grazing than total denial . Rotational grazing is the only suitable method to reduce pressure.

1. Grazing and lopping to be confined within 1 km distance from the village boundary. The forest within that limit is to be divided in to 5 equal parts. The people will be asked to graze their cattle in one patch in a year and to rotate the grazing by shifting to next patch year after year.
2. Goatery to be discouraged.
3. Incentives to be provided for stall feeding, purchase of hybrid cattle and castration of penned cattle.
4. No livestock will be allowed to move free but to be guarded by a cow boy.
5. Three cattle pounds (Kanjia hoda) to be constructed to impound the cattle.

Following activities will be undertaken in the wilderness zone. But the details are being discussed in theme plan as they are to be implemented in more than one zone.

1. Forest protection from illicit felling, transit, fire, grazing.
2. Plantation activities.
3. Animal health surveillance.
4. Weed eradication.
5. Maintenance of Water bodies
6. Maintenance of Salt licks

#### **6.2.2. Sub Plan for Eco-Development Zone :**

Detail plan is being discussed in the Chapter 8 – ( Ecodevelopment plan)

### **6.2.3. Sub Plan for Eco Tourism Zone :**

Details is being discussed in Chapter – 7 (Tourism, Interpretation and Conservation Education).

### **6.2.4. Sub Plan for Relocation Zone :**

#### **6.2.4.1 Justification of Relocation.**

There are certain villages like Raigoda in Satkosia Wildlife Division, Marada, Kuturi, Salapaganda, Musuguda of Mahanadi Wildlife Division, which are located in such a situation that they can not be ringed out from the sanctuary as they are in the heart of animal breeding zone. Due to their presence, the habitat of wildlife is fragmented and the people also suffer due to crop depredation and cattle depredation by the wild animals. They have no scope to avail the developmental activities of the Govt. They are deprived of education, health, electricity, communication and source of livelihood. So these, villages need to be relocated from the boundary of sanctuary for betterment of wild animals and as well as the villagers. During inquiry of the District Collector, Angul, villagers of Raigoda expressed their willingness to be relocated. Therefore this plan includes Raigoda village as the restoration zone. But regarding other four villages of Mahanadi Wildlife Division, the people are not willing at present to evacuate the area but so far as management of wildlife is concerned, they should be relocated in near future. This plan recommends organizing constant motivation camps in this four villages so that they volunteer to be relocated.

#### **6.2.4.2. Constitution of the Zone:-**

The Collector, Angul in his recommendation Dt. 24.07.1998 for issue of final notification of the sanctuary, has stated that only Raigoda village of this sanctuary is to be shifted to a new site with all applicable rehabilitation packages as per norms of Water Resources Department and Rehabilitation and Resettlement Policy of the State Govt. The villagers of Raigoda have also volunteered to shift leaving their 172.4 ha land to which necessary treatment are to be given to make them a suitable habitat for the wild animals.

#### **6.2.4.3. Past Management:**

Raigoda village was covered under buffer Zone where Eco Development activities were undertaken in the last Plan. One EDC has been formed. Plantations like Aided Natural Regeneration covering 3 ha of area and Pasture Land Development covering 2 ha of area, Jagannath Vana Prakalpa covering 20 ha have been taken up.

#### **6.2.4.4. Specific Objective.**

1. To identify a suitable site near to N H 42 / PWD road having culturable land for agriculture.
2. To make an alluring relocation package.
3. To make follow up action of rehabilitation in the new site for 5 years.
4. To develop grass land for wild animals in the evacuated area.
5. To create some new water bodies, water holes and to renovate the existing check dam and water bodies to provide water to wild animals.



#### **6.2.4.5. Prescription of Activities.**

##### **6.2.4.5.1. Identification of suitable relocation site:**

The villagers of Raigoda are depending on agriculture. So the new relocated area must have enough cultivable land. Some non-forest land close to the N.H.42 or PWD road or any existing developed village is to be selected so that developmental activities can be taken up quickly. If non-forest lands are not sufficiently available, then degraded revenue forest kism land may also be identified. A proposal for forest clearance may be submitted for permission under F.C. Act, 1980. If 172.4 ha of areas is not available in a single patch, cluster of small patches can also be identified within a radius of 3 to 4 km..

Collector ,Angul who is the Chairman of Task Force for Satkosia Gorge Sanctuary has already been approached time to time to identify such land and to alienate it following all Land acquisition Procedures.

##### **6.2.4.5.2. Alluring Relocation Package:**

a) The Government of India, through a scheme called “Beneficiary Oriented Scheme for tribal villages of Project Tiger Area, National Park and Wildlife Sanctuary (Central Sponsored)” provides Rupees 1.00 lakh per family for effecting shifting of villages. In Raigoda, there are about 30 families. So, Rupees 30.00 lakh can be obtained from Central Government for their shifting.

b) Rehabilitation can be made as per the norms of Water Resources Rehabilitation and Resettlement Plan of the State Government which is enclosed in this plan as Appendix.

c) The Alluring Package for the people will include following minimum facilities for the villagers.

- (i) Permanent provision for drinking water,
- (ii) School with play ground for children,
- (iii) Community hall.
- (iv) Internal roads.
- (v) Approach roads to crop fields.
- (vi) Electricity supply.
- (vii) Financial assistance for construction of latrines.
- (viii) Construction of drainage and sewerage system.
- (ix) Land for cremation ground, common land, grazing land, and some reserve land for future development.

**6.2.4.5.3. Follow Up action:**

After settlement in new area, community based activities and other Development activities are to be taken up. Follow up action for 5 subsequent years are to be taken up to make the relocation process successful. An extra fund @ Rupees 2.0 lakh per year, total Rupees 10.00 lakh is required for the same.

**6.2.4.5.4. Creation of grass land:**

Out of 172.4 ha of vacated land 60 ha area will be developed in to a meadow , 30 ha. for legumes by sowing seeds of legumes and transplanting slips of palatable grasses, 30 ha. of bamboo, 22 ha. of fodder tree will be raised , water body over 10 ha. of area will be created and development of infrastructure for facilitating animal sighting over 20 ha. will be made. A methodology is to be adopted for easy sighting of wild animals there.

#### **6.2.4.5.5, Motivation camps**

There will be a regular motivation camps in the villages like Kuturi, Marada, Salapaganda and Musuguda to motivate the villagers to evacuate the area for their economic development. Such type motivation will continue till they volunteer to be relocated.

### **6.3. THEME PLAN.**

The activities which are to be taken up in more than one zone are being kept in Theme Plan.

#### **6.3.1. Protection Plan.**

Under the theme plans some more emphasis will be given on the protection plan and research.

Protection plan prescribes.

⇒ New road alignments for surveillance and monitoring and to have a feel of the sanctuary biodiversity

Protection of forests against illicit felling and poaching is more important than any other interventions.

##### **6.3.1.1. Specific Objectives.**

- a. To protect the forest from illicit felling of Teak and Sal.
- b. To check poaching of wild animals with emphasis on elephants.
- c. To strengthen the intelligence collection system and communication system.
- d. To strengthen the protection squads.
- e. To improve mobility.

### **6.3.1.2. Activities.**

#### **6.3.1.2.1. District Task Force.**

It has already been decided by the Chief Secretary, Government of Orissa to constitute District Task Forces for Satkosia Gorge Sanctuary. The sanctuary covers part of 4 Revenue Districts like Angul, Cuttack, Boudh and Nayagarh and 2 Wildlife Divisions namely Satkosia Wildlife Division and Mahanadi Wildlife Division. Three D.T.F. are functioning in Angul, Cuttack and Nayagarh Districts. Four District task forces for Satkosia Gorge Sanctuary are required as detailed below.

#### **Constitution :**

District Magistrate cum Collector .....Chairman

DFO Satkosia Wildlife Division.....Member Secretary (for Angul & Cuttack)

DFO Mahanadi Wildlife Division .....Member Secretary (for Nayagarh & Boudh)

DFO (Territorial) of concerned District.....Member

Superintendent of Police of concerned district.....Member

DFO Satkosia Wildlife Division and Mahanadi Wildlife Division will convene the District Task Force meeting in their allotted districts after consultation with the respective Collectors. The District Task Force will see that the sanctuary is well protected. They will also make the strategies like deployment of Police Force and Executive Magistrates at the vulnerable / strategic places and assist the forest staff in conducting village raids, house searches and

apprehension of offenders. They will also move to Chief Secretary, Home Secretary, Forest Secretary and to the Principal Chief Conservator of Forests, General and Wildlife for rendering necessary help for protection of the sanctuary. The District Task Force meeting is to be convened once in a year at the minimum.

#### **6.3.1.2.2. Special Protection Force.**

Satkosia Gorge Sanctuary is coming under the jurisdiction of 2 Territorial Conservators i.e. Conservator of Forests, Angul Circle and Conservator of Forests, Bhubaneswar Circle. Since the sanctuary is looted by the smugglers of adjoining Territorial Divisions, a collective protection measure will be very much effective. For better coordination among all the divisions, the respective Conservator of Forests will constitute a Circle Level Special Protection Force for the sanctuary taking staffs of different divisions and monitor their activities.

One Special Protection Force of the division is proposed to be stationed at Balikiari of Athgarh division which is just at the border of the sanctuary strategically located. A Jeep will be at their disposal.

Another Special Protection Force is proposed to be stationed at Badamul under Mahanadi Wildlife Division. A jeep will be at their disposal.

The duty of the Special Protection Force is to check entry of smugglers into the sanctuary through all possible routes. They will check such routes regularly and help in seizure of forest material and vehicles by the local staff and give intelligence regarding the illicit felling and poaching of wild animals in general and elephant in particular.

They will pass on message to the concerned V.H.F. stations where the smugglers are expected to have entered. They may seek help from staff stationed at different strategic locations.

#### **6.3.1.2.3. Deployment of OSAP (Orissa State Armed Police) Force.**

Tulka under Purunakote range is a hyper sensitive area. Encounters with timber smugglers in groups of 100 – 150 coming from Narsinghpur side are very common. Exchange of fire between forest staff and smuggler group is a common occurrence. Injury and causality are also recorded. All strategies on deployment have proved futile. Only OSAP could be able to protect the forest during their stay at Tulka for 8 months i.e. from 28.10.2000 to 19.6.2001. After their departure also effect was felt up to further one year. One to two sections of OSAP are required to be deployed in this sanctuary at Tulka and Badamul.

#### **6.3.1.2.4. Elephant Tracker.**

Local people are more conversant with the movement of elephants in their area. They also know all the foot paths, water body, places where elephants take rest and spend more time. Persons knowing these information are to be engaged as elephant trackers, who will gather information on elephant (herd or tusker), movement and their health and transmit the same to the respective Range Officers in the evening through nearest VHF station. While tracking the elephants they will be watching the movement of poachers also , if any. They will also provide

intelligence on the entry of any poacher in to the forest area of both core and buffer zones. They will be provided with Khaki uniform, I.D. Card, water bottles and registers.

There will be 6 elephant trackers in each range round the year. There are 5 ranges in the sanctuary.

So 30 persons x 12 months x Rs.2100 x 10 years is required to meet this expenses for conservation of Asiatic elephants in this sanctuary.

The vulnerable region where the elephant trackes will be engaged are Raigoda, Kadalikhola, Kandhaida, Kantarasingha, Jhirpani, Tersingh, Siaribhundi, Katrang, Chunabhati, Bhurkundi, Kuadoli, Chuanri, Ranibandha, Baghamunda and Majhipada within core zone and at Barasingha, Jayapur, Bhusuka, Nuagarh, Bipradihi, Taleipathar, Nuakheta in Buffer zone.

#### **6.3.1.2.5. Foot patrolling Squad.**

##### **(a) Anti-poaching Squad**

The sanctuary has rugged terrain and dense vegetation. To ensure effective patrolling the squads need to patrol the forest by foot, besides normal patrolling by vehicles. Foot patrolling on following routes will help in proper surveillance and monitoring. Any change in wildlife health condition and wildlife habitat can be properly assessed by foot patrolling. Therefore it is suggested convert following foot paths/old extraction paths for foot patrolling after proper road alignment.

The poachers from outside the sanctuary enter into it in groups of 4-8 with muzzle loaded guns and hunt sambar, barking deer, mouse deer, wild pig, & langur for meat purpose and selectively hunt tuskers to obtain tusks from them.

The poaching of elephant tuskers have increased to some extent in recent past. The existing field staffs of the Division are not sufficient to cover the entire sanctuary area either to locate the poachers or to protect the sanctuary from them.

To bring the entire sanctuary areas under clutch following arrangements have been proposed.

1. The vulnerable areas have been identified.
2. Such areas are divided into 20 protection zones.
3. 20 anti poaching squads are to be constituted one in each zone comprising 4-5 persons in each squad.
4. The routes of each squad for patrolling by walk has been determined and plotted on sanctuary map.
5. Anti poaching camps will be set at 19 places.

In most of the cases existing buildings will be utilized as antipoaching shed. But in few cases temporary anti poaching sheds are to be constructed.

6. Surveillance and monitoring will be under taken simultaneously. The Range officers will be provided with vehicles to monitor their work.

#### CONSTITUTION OF ANTI POACHING SQUAD AND THEIR ROUTES.

##### RANGE – TIKARPADA

A.P. S-1 (HQ-Majhipada)

Majhipada → Majhipada RF-C/8 → C/4→C/3→C/2→C/1→C/5  
Karasingh Khola→ C/9→ Kadalikhola watchtower.

APS-2- (HQ:-Karadapada)



Karadapada→ Majhipada RF-C/9 → C/10→C/11→ C/17→ Kadalikhola

APS-3-- (HQ:- Majhipada)

Majhipada → HatidharaRF C/25→ C/24→C/27 C/23→Naleswar→ Bipradihi

APS-4-- (HQ:- Tikarpada)

Tikarpada→ Tikarpada RF C/4→ C/1→  
C/2→Jhanajhana→C/3→Kandhaida

APS-5-- (HQ:- Tikarpada)

Tikarpada→ Tikarpada RF C/5→ C/6→ C/7→C/8→Katrang

### **RANGE- PURUNAKOTE**

APS-6-- (HQ:- Purunakote)

Purunakote→ Majhipada RF-C/14→ C/15→ Hatigirija → Bada damak  
→ Sana damak→ Bada Kurudu→ Sana Kurudu→ Kadalikhola→  
Rautibahal

APS-7-- (HQ:- Baghamunda)

Baghamunda→ Baghamunda RF-C/6→ C/7→  
C/9→Rautibahal→Bipradiha

APS-8-- (HQ:- Chhotkei)

a) Chhotkei → Purunakote RF C/17→C/18→C/19→C/20→Kuannali  
→ Chhotkei

b) Chhotkei → Purunakote RF

C/7→C/12→C/13→C/14→C/15→ Chhotkei

a and b routes will be patrolled alternatively.

APS-9-- (HQ:- Purunakote)

Purunakote → Purunakote RF C/9→C/10→C/11→C/8→Purunakote

APS-10-- (HQ:- Tulka)

a)Tulka → Tulka RF C/1→C/2→C/3→C/4→ C/5→ Tulka

b) Tulka → Tulka RF C/6→C/7→C/8→C/9→ C/10→ C/11→ C/12→  
Tulka

a and b routes will be patrolled alternatively.

### RANGE- PAMPASAR

APS-11-- (HQ:-Kumuri)

Kumuri →Tainsi RF → KumuriPRF→Burti RF → Kumuri

APS-12-- (HQ:- Labangi)

Labangi→ Kantarsinga → Jaunli Asan→ Dangakhola→ Raigoda RF  
C/15  
→ Raigoda →Labangi

APS-13-- (HQ:- Labangi)

Labangi→ Chuanri → Kuanali→ Chhotkei

APS-14-- (HQ:- Labangi)

Labangi→ JocabRF C/5 → C/4→ C/3→C/2→Pampasar

### RANGE- RAIGODA

APS-15-- (HQ:- Raigoda)

-149-

Raigoda→ Rasenda → Kuadoli→ Raigoda

APS-16-- (HQ:- Raigoda)

Raigoda→ Purunapani → Nuakheta→ Raigoda

APS-17-- (HQ:- Raigoda)

Raigoda→ Tersingh → Cherpani→ Nuagarh road → 60 Acre→ Raigoda

APS-18-- (HQ:- Bhurkundi)

Bhurkundi→ Raigoda RF C/16 → C/11→ C/12 → C/13→ Bhurkundi

### **RANGE- JILLINDA**

APS-19-- (HQ:- Katrang)

a)Katrang→ Katrang RF C/1→ C/2→ C/3→Katrang

b) Katrang→ KatrangRF C/7→ C/8→ C/9→C/10→ Katrang

a and b routs will be patrolled alternatively.

APS-20-- (HQ:- Siaribhundi)

Siaribhundi→ KatrangRF C/4→ C/5→ C/6→Siaribhundi

EXISTING BUILDINGS AT	TO BE CONSTRUCTED AT
Majhipada	Karadapada
Kadalikhola W/T	Bipradihi
Tikarpada	Rautibahal
Kandhaida W/T	
Katrang	
Purunakote	
Baghamunda	
Chhotkei	
Tulka	
Labangi	
Pampasar	
Raigoda	
Bhurkundi	
Katrang	
Siaribhundi	
Kumuri	

## ANNUAL BUDGET

These will be 20 APS operate in the Division with forester / FG being the squad leader. There will be 4 Nos. of daily wages local people in each squad to assist. They will be engaged on consolidated wages @ Rs.3000 each, as they will work for more than 8 hours.

Three daily wages drivers will be engaged to drive the Govt. vehicles.

ITEM	RATE	AMOUNT
20 APS x 4 persons x 12 months	@ Rs.3000/- per month	Rs.28, 80, 000/-
3 drivers x 12 months	@ Rs.4000/- per month	Rs.1,44,000/-
Construction of Anti-poaching sheds 3 no.	@ Rs.25,000/- per month	Rs.75,000/-
Purchase lantern, Kerosene oil, torch, battery, medicines, foods, L. S		<b><u>Rs.50,000/-</u></b>
		<b><u>Rs.31,49,000/-</u></b>

Rs. 31,49,000/- will be required annually to check the poaching in the sanctuary.

### **(b) Anti-smuggling Squad:**

The teak plantation on nearly 30 sq. km area and natural Sal, Piasal & Sisum trees have attracted the timber smugglers from out side the sanctuary to fell and remove illicitly.

Since hundreds of smugglers in a group are entering in to the sanctuary with lethal weapons, forest staff are unable to protest them. So beat system of administrative set up in Satkosia Gorge Sanctuary has proved fruitless. Therefore it is suggested to protect the forest by group of Forest Personnel. The following 16 Forest patches are highly vulnerable to illicit felling.

Tukla, Baghamunda, Raigoda, Kuadoli, Labangi, Atharmile, Katrang, Siaribhundi, Dolasingha, Tainsi, Tikarpara, Chhamundia, Manibhadra, Sisupathar, Sitalpani, Badamul, Marada & Kuturi.

All the beat Forest Guards are required to be pooled in to the nearest Section Headquarters or Range headquarters. Their number will be 13 in every group (1 Forester + 4 Forest Guards + 8 Squad men ). In Satkosia sanctuary staff strength is very less. Many posts are lying vacant. So it is proposed to engage effective, tall, strong and stout, local youths as protection Squad men at **8** most vulnerable places like Tulka, Raigoda, Baghamunda, Bhurkundi, Labangi, Kandhaida ,Siaribhundi & Majhipada **@ 8** Nos. in such vulnerable place round the year.

Required staff strength can be obtained by deploying staff from other divisions on deputation, if regular posting is not possible.

**6.3.1.2.5. ( c) Watch Towers at strategic locations:-**

There are 8 most vulnerable plan in the sanctuary as stated above. Watch towers with 10’X10’ living room at top will be constructed which will be furnished with permanent bed, drinking water facility, kitchen and toilet at bottom of the tower. These towers will be utilized by the Antipoaching Squad and Antismuggling squad. The tentative cost of each such tower will be Rs. 6,00,000/- each.

**6.3.1.2.6. Divisional Mobile Party.**

Two Divisional Mobile Party are proposed to be stationed one at Angul, other at Chhamundia with one jeep each for helping the staff in the field for conducting raids, for urgent forest protection work on requisition.

Composition of DMP:	Forester	..	1
	Forest Guard	..	2
	Attendant	..	2
	Driver	..	1

The DMP jeep will have mobile VHF sets. The DMP will be provided with lathi, gun, cartridges, helmet and chest guards.

### 6.3.1.2.7. Road maintenance for Patrolling.

Satkosia WL Division	Purunakote-Balikiary	25 kms
	Tarava-Kumuri	6 kms
	Purunakote-Baghamunda-	7 kms
	Kumuri Tarava	6 kms
	Tikarpara-Baliput	18 kms
	Pampasar-Raigoda	24 kms
	Labangi-Chuhanri-Tulka	<u>17 kms</u>
		<b>103 kms</b>
Mahanadi WL Division	Bhabapur-Padmatola	15 kms
	Sansilinga-Badmul	12 kms
	Dhipisahi-Padmatola	13 Kms.
	Geredisahi-Padmatola	10 Kms.
	Chhak	
	Nimandi-Malaspadar	<u>7 Kms.</u>
	<b>57 Kms</b>	
<b>Total :</b>		<b>160 Kms</b>

Every year these roads need maintenance on priority basis which need stone packing, earth filling, side drain cutting, provision of cross drainage, side bush cutting. All the wooden bridges will be replaced by RCC culverts to

enhanced communication and make the roads all weather. Since the road repair work is labour intensive work, funds can be obtained from NREGS, NFFW. A details programme is to be drawn up and sent to Project Director, DRDA to obtain the funds so that the villagers living inside the sanctuary will have assured engagement during the lean period of work.

#### **6.3.1.2.8. Wireless network.**

Wireless network has already been built up in this sanctuary.

- a. 3 new base stations are required to be installed at Bhurkundi, Baliput and Kumuri.
- b. 5 new mobile sets are required to be fitted in 3 Divisional Mobile Party jeep and in 2 motor launches.
- c. 10 new hand sets are required for use by Foresters and Forest Guards.
- d. Old VHF sets need repair and replacement.

VHF attendants will be engaged in 3 new base stations on daily wage basis round the year.

#### **6.3.1.2.9. Mobility.**

- a. 2 new jeeps are required to be purchased for the proposed Division Mobile Parties, one in Satkosia Wildlife Division and other for Mahanadi Wildlife Division.
- b. Maintenance of existing 3 jeeps and 2 new jeeps, 5 motor launches will be required for which special fund is required.
- c. P.O.L. for all the 5 jeeps and 5 motor launches are to be purchased to run the Mobile jeeps for protection of Forest and Wildlife.

#### **6.3.1.2.10. Secret Fund.**

- a. Collection of confidential information is an integral part in forest protection. A secret fund is to be raised for giving incentives and rewards to the informants in Wildlife offence cases.
- b. As provided in Forest Protection Rules 2005, a Secret fund will be raised out of 45% of 25% of sale value of the seized produce, which will be given to the informants and staff.

#### **6.3.1.2.11. Rewards.**

In the Forest Protection Rules 2005, 25% of the sale value of the seized forest produce will be given as rewards as per rule.

#### **6.3.1.2.12. Arms and Ammunitions.**

Every staff working in the sanctuary is to be equipped with arms and ammunition for self defence and to drive out the unauthorized persons from the sanctuary. Though guns and rifles are there they are not functioning properly due to lack of timely maintenance.

- a. Maintenance / servicing is required for existing Revolvers, Rifles and Guns.
- b. Purchase of 5 Rifles, 5 Guns and their ammunitions will be made. Rubber bullets are to be procured for firing to avoid causality.
- c. **Training on handling** the arms and ammunition is equally important. **Arms training** includes servicing, maintenance, and firing practice in ranges. Every year there will be 2 training camps for all the staff where test target firing will be organised.



### 6.3.1.2.13. Modern Gadget:-

Besides the arms and ammunitions an VHF sets following modern gadgets are required to be used at division level. They are as follows:-

Sl.No.	Name of the Articles	Quantity	Amount (inRs.)
1	Binoculars	20	2,00,000
2	Night vision binoculars	10	5,00,000
3	GPS and its software	20	4,00,000
4	Flair gun	20	4,00,000
5	Hooter	10	1,00,000
6	Mega Phone	10	2,00,000
7	Cell phones, with recharging costs	10	2,00,000
8	Computer for crime cell	5	5,00,000
		Total	25,00,000

### 6.3.1.2.14. Traffic control.

Wild animals die due to road accidents. There are 2 PWD roads in the sanctuary. Pampasar to Tikarpara 30 kms, Kusanga – River Bank – 10kms. These roads are being used by the public (local people) for their movement by two wheelers and four wheelers. To control their speed following steps are to be taken.

- a. Speed breakers (humps) to be made out on every beginning and end of wooded area – 10 humps.
- b. Signages to be erected with fluorescent colour for awareness of speed limit – 10 signages.
- c. Double white lines with paint will be put on the road mentioning ‘SLOW’ within 2 lines - in 10 locations.

#### **6.3.1.2.15. Check gates.**

Check gates at entry points to the sanctuary is an important aspect to protect the sanctuary from illegal entry of miscreants. Check gates are operating at sanctuary borders like Pampasar, Nuakheta, Raigoda, Baliput, Malisahi and Kusanga. But only three are being operated by staff day and night, other gates are unmanned. There are places on the border where check gates should be erected for better protection. Such places are Jagannathpur, Kumuri, Bhurkundi, Badasilinga.

Some unmanned check gates will be erected on the forest roads leading to either watch towers or vulnerable places. Such places are Karadapada, Hatibari, Purunakote, Chhotkei, Majhipada, Bhurkundi (on Kuadoli road), Lembuchali, Padmatola.

#### **6.3.1.2.16. Establishing Crime Cell and Prosecution Unit.**

The crime cell and Prosecution Unit will be established at Division office at Angul. This cell will have 3 distinct functions i.e. intelligence collection, coordination of activities among all antipoaching and antismuggling squad and enforcement and prosecution.

All the 3 functions will be monitored by 3 Forest Rangers. Computers, cell phones will be provided to them for smooth monitoring. A separate building will be constructed in the name of Crime Cell. Provision will be there to out source the services of advocates/law officers in preparing prosecution records, evidences and handling the important cases in the trial courts. Rs. 10,000/- per month will be earmarked for this purpose.

### **6.3.2. FIRE CONTROL PLAN.**

Forest fire in Satkosia is 'ground fire' which burns the surface litter, loose debris on the forest floor. Forest fire in this sanctuary starts after 15<sup>th</sup> February and continues till arrival of monsoon every year. It causes irreparable damage to the young regeneration of seedlings and coppice growth and affects to some extent the saplings and pole crops.

Fire in the sanctuary is caused mostly due to intentional burning by local people rather than accidental. Forest fire normally starts along the PWD / Forest road sides and bridle paths.

#### **6.3.2.1. Specific objective.**

- i) To create awareness among the local people.
- ii) To take preventive steps.
- iii) To improve communication network and mobility.
- iv) To extinguish fire at first sight.
- v) To ensure people's participation through incentives.

#### **6.3.2.2. Prescription of Activities:**

##### **6.3.2.2.1. Awareness and Training.**

During first fortnight of February every year ,it is proposed to impart training on fire fighting, awareness campaign to be arranged regarding the cause and damage of forest fire etc. Forest Department staff, NGOs and local people are

to participate in the above activities. For awareness of the people following things are to be done.

- i) Signages on public road for prevention of fire will be erected .... 50 signages
- ii) Posters, leaflets are to be distributed among the villagers residing inside / around the sanctuary 150 villages
- iii) Cycle rally, pada yatra are to be organised taking forest staff, NGO and school students ..... 50 villages
- iv) Awareness campaign using vehicles and loud speaker 3 jeeps every year during fire season
- v) Range level training to forest staff, local people, EDC members, fire fighting squad on combating fire every year. 8 training camps

**6.3.2.2.2.Fire line Tracing.**

Along both the sides of PWD road, forest roads fire lines of 10 ft width after 15 ft away from road are to be traced by controlled burning of dry leaves, twigs etc. during first fortnight of February every year. There are 221.5 kms of forest road, 40 km of PWD road and 33.5 km of Panchayat road in this sanctuary.

It is proposed to fire trace at least 230 km of different roads every year as detailed below :

PWD road	..	40 kms
Panchayat road	..	30 kms
Forest road	..	<u>160 kms</u>

230 kms every year.

#### **6.3.2.2.3. Watch towers with watchers.**

There are vantage points on hill tops from where different large areas of valley and plain lands are visible. Tree top machans are to be constructed from where Watchers will sit with a VHF hand set and a Binocular to locate the fire. During fire season i.e. from 2<sup>nd</sup> week of February to 2<sup>nd</sup> week of June (4 months) daily waged Watchers will be engaged. VHF hand sets and Binoculars are there. Seeing through Binoculars, the Watcher will try to locate the smoke during day time and direct sighting of the fire in night and inform the nearest VHF station of patrolling party to approach the exact location where fire has broken out. They may use Xerox copy of topo map of the locality to give reference of longitude, latitude, nalla, hill etc. for the patrolling party.

- 20 vantage points will be identified.
- 20 tree top machans will be constructed.
- 40 Daily waged Watchers will be engaged for 4 months, 2 per each vantage point.
- 10 more VHF hand sets with solar charger will be purchased and supplied to the Watchers.
- 10 more Binoculars will be purchased.

#### **6.3.2.2.4. Fire fighting Squad.**

There will be 18 fire fighting squads in the sanctuary to be stationed at 7 range hqs. & at Bhurkundi, Baghamunda, Tulka, Tarava, Majhipada, Sitalpani, Marada, Nuapada, Padmatola, Dhipisahi & Purunapani.

Each Squad consists of one Forester and 5 daily waged labourers. They will be provided with fire fighting equipments, one hired jeep, one VHF handset.

Total 4 hired jeeps for 4 months

18 x 6 = 108 daily waged labourers for 4 months.

4 VHF sets to be purchased

18 set of fire fighting equipments are to be purchased

Food, water, medicine, First-aid box, torch and other logistics are to be supplied to the party.

The squad will move to the fire affected area as per messages received from the fire Watcher stationed at Watch tower by using the references in topo map. Besides, the squad will patrol as a routine work on the roads assigned to them. They will extinguish the fire as early as possible.

**6.3.2.2.5. List of Fire Fighting Equipments (1 set):**

Sl.No.	Name of Equipment	Price each (in Rs.)	Quantity	Amount
1	Fire proximity suit	49000	1	49000
2	Fire Retardent suit	28000	4	11200
3	Fire helmet	1100	4	4400
4	Fire shoes	1000	4	4000

5	Leather cum canvas gloves	150	4	600
6	Fire beater	520	5	2600
7	Fire Axe	700	2	1400
8	Fire bucket	275	2	550
9	Fire hook	550	2	1100
10	Fire rake	150	1	150
Total				75000 / set

18 sets of fire fighting equipments will be purchased to be used by 15 squads.

#### **6.3.2.2.6.Participation of Eco Development Committees.**

85 more Eco-development committees are to be formed besides 17 EDCs already formed. The EDC members will be asked to protect the sanctuary from forest fire during the fire season. For successful prevention of fire for that season 50 selected EDCs are proposed to be given an incentive of Rs.5,000/- each annually on the General Body Meeting of the Forest Development Agency. It is proposed that 5 EDCs are to be awarded with Rs.3,000/- each per year who have excelled in controlling forest fire most efficiently around their villages. An amount of Rs.10,000/- as incentive will be given to each 30 sensitive villages for not setting fire.

**Budget:**

Incentive for 30 sensitive village per year @ 10,000/-=Rs.3,00,000/-per year.

Incentive for 50 EDC per year @ Rs.5,000/- = Rs.2,50,000/- per year

Award 5 EDC per year @ Rs.3,000/- per each= Rs. 15.000/- per year.

District Award, 4 districts per year @ Rs.2000/-=Rs. 8,000/- per year.

**6.3.2.2.7. Maintenance of Data Base.**

Without suppressing the fire incidents in the sanctuary, a Data base is needed to be developed for this sanctuary. Every Beat Forest Guard should maintain a fire accident register where he should write following information.

Data of occurrence.

Time of occurrence.

Place of occurrence (Geo-coordinate if possible are to be given).

Extent of fire.

Origin or source of fire.

Cause of fire, if known.

Whether the occurrence is a repetition, a fire map is to be prepared for the sanctuary.

**6.3.3. Creation and maintenance of Waterholes.**

As it has already been discussed earlier ,there are 24 water reservoirs in the sanctuary. But scarcity of water during pinch period is experienced due to geological condition of the sanctuary and hence new ones are to be created and old ones maintained.



### **6.3.3.2. Specific Objectives.**

- i) To renovate the dead water holes and water reservoirs.
- ii) To construct small water holes inside the sanctuary to quench the thirst of animals during pinch period i.e. from March to May.
- iii) Tapping the ground water.
- iv) Carrying water from river by tankers and filling the artificial water holes to be constructed along the forest roads.

### **6.3.3.3. Prescriptions of Activities.**

#### **6.3.3.3.1. Renovation of existing water holes.**

All the water existing reservoirs are being silted gradually causing reduction of storage capacity of water. There fore it is proposed to desilt all the water holes in every year. Every year all the water holes are to be desilted during the month of May when there is least water in the reservoir. The embankments are to be strengthened. The outlets and inlets need to be repaired annually.

20 water holes @ Rs.30000/- i.e. Rs.6,00,000/- per year is required.

The activity will be undertaken during May of every year, when there is least or no water in the reservoirs.

#### **6.3.3.3.2. Construction of water holes.**

It is proposed to construct about 124 small water holes and 25 big reservoirs inside the sanctuary and 10 big water bodies inn the Buffer zone to quench the thirst of the wild animals.

**Design of water holes :**

1. Saucer shaped pond of 3' depth at centre with 10' diameter. It will be made up of cement concrete with rough surface. The water hole will camouflage with the surroundings.
2. Ponds will be dug of size 10' x 10' roughly with irregular sides with 3' depth at one side, 6" at opposite side. A large sized thick polythene sheet will be spread over the pond. Clay mud collected from nearby agriculture fields will be spread 1' thick over the spread polythene sheet.
3. Brush wood shade preferably with branches of Jamun tree will be put with a height of 7 ft over the small water holes to prevent evaporation loss. Besides, the animals will get shade while drinking.

**Source of water :**

1. Rain water harvest during rainy season.
2. During summer, the water holes near to River Mahanadi will be filled up by tankers.
3. Four Bore wells will be dug near existing water holes / water reservoirs. Solar operated pump loaded over a Jeep / Tractor will be used to lift water from bore wells to fill up the reservoirs on every 10th day during the summer.

**Proposed Location of Water holes:**

**(i) Small water holes:** These types of water holes will be constructed close to the following forest roads which are motorable for tractor and tanker. The location selected should have least biotic interference.

Selected forest roads	Total length (in kms) Appendix-59	No. of water holes
Tulka-Labangi	14.0	3
Chhotkei-Katrang	17.0	8
Pampasar-Raigoda-Lembuchhali	20.6	10
Tulka-Chhotkei-Purunakote	15.0	8
Karadapada-Kandhaida	6.0	3
Purunakote-Baghamunda	9.0	5
Tarava-Kumuri	7.0	4
Tikarapara-Katrang	15.0	5
Karadapada-Kadalikhola	12.0	5
Bipradihi-Karadapada	10.0	8
Tulka-Bhurkundi-Rasanda chhak	17.0	19
Badasilinga-Gergedi	15.0	8
Dhipisahi-Padmatola	10.0	6
Kuturi-Marada	8.0	4
Bhapur-Padmatola	15.0	6
<b>TOTAL</b>	<b>157.6</b>	<b>124</b>

Selected forest roads	Total length (in kms) Appendix-59	No. of water holes
Tulka-Labangi	14.0	3
Chhotkei-Katrang	17.0	8
Pampasar-Raigoda-Lembuchhali	20.6	10
Tulka-Chhotkei-Purunakote	15.0	8
Karadapada-Kandhaida	6.0	3
Purunakote-Baghamunda	9.0	5
Tarava-Kumuri	7.0	4
Tikarapara-Katrang	15.0	5
Karadapada-Kadalikhola	12.0	5
Bipradihi-Karadapada	10.0	8
Tulka-Bhurkundi-Rasanda chhak	17.0	19
Badasilinga-Gergedi	15.0	8
Dhipisahi-Padmatola	10.0	6
Kuturi-Marada	8.0	4
Bhapur-Padmatola	15.0	6
<b>TOTAL</b>	<b>157.6</b>	<b>124</b>

(ix) **Big water reservoirs:**

**CORE ZONE:** The locations are near Takarsingha, Labangi, Majhipada, Hadibasa baro, Baghamunda, Raigoda, Siaribhundi, Jocub, Salor, Karadapada, Sitalapani, Godighati, Marada (Compt. No. 11, 4, 5 of Padmatola

RF), Panchakiari, Salap ganda, Purunapani, Bethiasahi, Dhipisahi, (Compt. No. 2, 7, 9, 15, 16 of Mahanadi RF) Compt. No. 2, 4, 15, 17 of Mahanadi RF, Compt. No. 1, 4 of Padmatola RF & in Compt. No. 4 of Arakhapadar RF.

**BUFFER ZONE:** At 2 places in Balikiary R.F., 2 places in Nyagarh R.F. and at once place each in Nandinia R.F. , Nuakheta R.F., Balang R.F. and 2 places in Hatidhara R.F. and Labangi D.P.F.

#### **6.3.3.3.3. Vigilance over water holes.**

During summer, every day, the local staff will visit the water holes twice. This will prevent poachers to come to water holes. Every day the water will be tested by smelling or pH will be tested by using litmus paper, if required, to check whether any poisoning is made. It is to be recorded what type of animals are often using the water holes.

#### **6.3.3.3.4. Prevention of domestic cattle.**

Water holes closer to villages are often shared by domestic cattle. They not only compete with the wild animals but transmit infectious diseases to them and contaminate the water of water holes. The staff visiting water holes will see the number of domestic cattle using the water holes from their hoves, dungs etc. Digging of more number of village ponds in nearby villages under Eco-Development activity will prevent the domestic cattle using the water holes meant for the wild animals.

#### **6.3.4. Animal health care & surveillance.**

Foot & mouth disease is reported from the wild & many Gaurs perished during 1978-79. Similarly livestock suffers from foot & mouth diseases, rinderpest etc. Since the wild animals & domestic cattle often share the same water hole, there is chance of disease outbreak. The uncontrolled grazing inside key habitat may transmit disease. The P.A. Authority has to carry out prophylactic vaccination program for the livestock within P.A. boundary. Vaccination of livestock of fringe villages within the zone of influence has to be taken up by Sanctuary authority & State Veterinary Department annually.

The plan proposed to have an animal health monitoring & disease surveillance cell which can look after wild health monitoring, post mortem, collection & preservation of materials, packing & dispatch of specimen, recording of biological information viz. migration of animals, carcass collection, sanitation procedure etc.

It is proposed to establish a veterinary unit at Tikarpada for meeting the above objectives. As discussed earlier, necessary action has been taken in establishing a rescue & rehabilitation center for fresh water reptiles at Tikarpada. Also the same is proposed to be established for other wild animals there. -168-

##### **6.3.4.1. Specific objectives.**

- i) To maintain the general vigour and sound health of the wild animals in the sanctuary.
- ii) To check infection from domestic livestock by prophylactic measures.

### **6.3.4.2. Activities.**

**6.3.4.2.1. Establishment of Veterinary Unit:** In order to carry out systematic research & monitoring work with respect to wildlife health, to carry out effective vaccination programme, to involve in animal physical immobilization, translocation, capture of problematic wild animals, rescue of wildlife, chemical restraints with modern tranquilisation methods 2 small veterinary units will be established at Tikarpada and Chhamundia with all modern equipments and drugs. It is proposed that units will have one veterinary surgeon and two livestock inspectors in each with some past experiences in wildlife treatment.

**6.3.4.2.2. Vaccination of domestic cattle:** It is discussed in sub para – 8 of Para 6.2.2.4 of Chapter-6.

**6.3.4.2.3 .Food supplements:** Vitamin supplement, salt supplement, anti helminth tablets and oral vaccines can be given in the small water holes or salt licks near to it for improving the health of wild animals.

**6.3.4.2.4. Pathological tests :** Fresh faecal samples will be collected from the field and tested in the laboratory established at Tikarapara to know about the endo parasites, helminth infection. The infected animals in the locality can be identified. Treatment can be given in salt licks or small water holes. If severe infection is suspected in a herd, blood sample, nasal swab, vaginal swab can be collected from any selected animal after tranquilization.

### **6.3.5. Weed eradication.**

Weeds like Chromolaena, Ageratum, Coryzoides, are dominating in areas which are being opened due to illicit felling. In most of the areas the undergrowth is replaced by weeds causing suppression of palatable indigenous herbs and shrubs.

#### **6.3.5.1. Specific Objectives.**

To remove weeds in the areas which are required to be covered under plantation and development of pasture land.

#### **6.3.5.2. Activities.**

**6.3.5.2.1.** Manual uprooting: In order to cover certain areas under pasture land, it is proposed to eradicate the weeds in a phased manner. The eradication will be done by uprooting them manually just before flowering and piling them at places to burn them. The manual uprooting will be followed by planting of fodder on the same patch for continuously 3 years and continue for entire plan period.

**6.3.4.2.2.** Block plantation of fuel wood, fodder species and grass species will be undertaken in all the enclosed villages over revenue land – 500 ha.

### **6.3.6. Plantation Plan.**

#### **6.3.6.1. Specific objectives.**

- a. To rehabilitate the degraded and illicitly felled open forest areas.
- b. To raise plantation of fuel wood, small timber species in revenue areas / private fallow lands.



### 6.3.6.2. Activities.

**6.3.6.2.1. RDF Plantation :** Due to biotic pressure and repeated illicit felling some dense forest areas are turning in to open forest. Unpalatable shrubs and weeds like Eupatorium and Ageratum are coming up as under growth. It is proposed to go for RDF plantation in those areas which will include weed eradication, regeneration, cleaning, soil working, soil and moisture conservation measures.

Nearly 2500 ha of such open forest or degraded land will be identified from following forest blocks and plantation will be done @300plants per ha for 10 years.

Location:

Forest Block	Compartment No.
Tulka RF	5, 7, 8, 9
Raigoda RF	12, 13, 14, 16
Bolang RF	11, 12
Jocub RF	2
Takarasingha RF	1, 2
Chhotamunda RF	1, 2, 3
Tainsi RF	1, 2, 5
Baghamunda	7, 9
Kuru RF	1, 3, 7
Purunakot RF	7, 12, 15
Padmatola	4, 5, 8, 9, 10, 11
Arakhapadar RF	1,2
Mahanadi RF	3,7

Choice of species will be purely indigenous. Fodder, shade bearing species & palatable shrubs.

### **6.3.7. Thinning Regime in Jagannath Bana Prakalpa (JBP) Plantation.**

#### **6.3.7.1. Aim of JBP:**

Plantation has been raised for sustained yield of timber for utilising them in construction of chariots of Lord Sri Sri Jagannath of Puri.

#### **6.3.7.2. Area of Plantation:**

Jagannath Bana Prakalpa plantations have been raised over 200 Ha of revenue land inside Satkosia Gorge Sanctuary during 2000-01 to 2003-04.

The village-wise area distribution and year of creation is given below:

Year	Village	Range	Area in Ha	Total
2000-01	Labangi	Pampasar	10	
	Raigoda	Raigoda	10	
	Chhotkei	Purunakote	10	
	Katrang	Jillinda	40	70
2001-02	Purunakote	Purunakote	10	
	Chhotkei	Purunakote	15	
	Ramimunda	Tikarapara	15	
	Hatibari	Tikarapara	10	50
2002-03	Hatibari	Tikarapara	10	
	Jocub	Pampasar	10	
	Baghamunda	Purunakote	10	30

2003-04	Kulang	Pampasar	10	
	Raigoda	Raigoda	10	
	Tuluka	Purunakote	10	
	Baghamunda	Purunakote	10	
	Katrang	Jillinda	10	50
Total			200 Ha	200 Ha

Species like Phasi (*Anogeissus acuminata*), Ghambar (*Gmelina arborea*), Simili (*Bombax ceiba*), Asan (*Terminalia tomentosa*), Kansa (*Hymenodictyon excelsum*) and Maha limba (*Ailanthus excelsa*) have been originally planted. In some patches with massive failure patches replacement with (*Acacia auriculiformis*) has been done. All the above species will be utilized as timber in construction of chariots.

#### **6.3.7.3. Maintenance:**

The plantation will be maintained up to 7 years.

**6.3.7.4. Rotation period:** No rotation period has been fixed in the scheme. It appears there will be selection working to obtain the desired length and girth of the timber.

### **6.3.7.5. Thinning:**

Thinning is a felling made in an immature stand for the purpose of improving the growth and form of the tree that remain, without permanently breaking the canopy. High powered steering committee of JBP on Dt.8.11.2005 have decided in agenda No.4 to take up thinning in the plantation.

### **6.3.7.6. Objective of Thinning:**

1. To distribute growth potential of a site amongst the trees retained.
2. To reduce the inter competition among plants for the limited food, moisture in soil and light above the ground.
3. To maintain hygienic condition in the stand by eliminating dead, dying, diseased and suppressed plants.

### **6.3.7.7. Thinning regime:**

Thinning regime may be defined as the whole set of thinning carried out in a crop from the earliest stage to maturity.

Thinning regime has been narrated in the **Para 2.1 and 2.4** of the scheme for **Shree Jagannath Bana Prakalpa** , the extract is given below.

“Para 2.1 : The prakalpa envisages close spacing ( i.e. 2m X 2m) planting of 2500 seedlings / ha. of desired species. This will help, promote growth in height and achieve clear bole of many trees. The first mechanical thinning of plantations shall be undertaken between 8<sup>th</sup> to 10<sup>th</sup> year. The pre commercial thinning shall be undertaken between 15<sup>th</sup> to 20<sup>th</sup> year. The commercial thinning shall be undertaken between 25<sup>th</sup> to 30<sup>th</sup> year. Thinning will help achieve the desired increment in girth

of trees. It is expected that the retained trees shall be available for final felling from 35<sup>th</sup> to 40<sup>th</sup> year.

Para 2.4: First mechanical thinning shall be undertaken from 8<sup>th</sup> to 10<sup>th</sup> year.

Alternate plants shall be removed to provide growing space to the remaining promising plants. The thinning materials may be given free of cost to the nearby villagers, whose willing cooperation is absolutely necessary for the success of these plantations. The concern DFOs shall strive to seek willing cooperation of the villagers”. Besides, elite thinning may also be undertaken if felt necessary by the DFO.

Name of Plantn.	1 <sup>st</sup> Mech. Th. (8 <sup>th</sup> – 10 <sup>th</sup> Yr.)	Pre Com. Th. (15 <sup>th</sup> - 20 <sup>th</sup> Yr.)	Com. Th. (25 <sup>th</sup> -30 <sup>th</sup> Yr.)	Final Felling (35 <sup>th</sup> – 40 <sup>th</sup> )
2000-01 (70 Ha.)	2008	2015	2025	2035 onwards
2001-02 (50 ha.)	2009	2016	2026	2036 onwards
2002-03 (30 Ha.)	2010	2017	2027	2037 onwards
2003-04 (50 Ha.)	2011	2018	2028	2038 onwards

### **6.3.8. Subsidiary Silvicultural operation in Bamboo.**

Bamboo forests spread over a vast area of the sanctuary and constitute a major fodder component for elephants in the sanctuary. Preservation and propagation of bamboo is equally important so far as Mahanadi Elephant Reserve is concerned. Bamboos get damaged due to congestion, fire and exposure of rhizome. So to protect bamboo clumps SSO work is required.

### **6.3.8.1. Objective**

1. To increase productivity of bamboo to supplement fodder requirement of herbivores in general and elephants in particular in Mahanadi Elephant Reserve.
2. To reduce fire hazard.

### **6.3.8.2 Activity**

1. Dried, burnt, broken, splited, high stump, diseased and grossly damaged culms will be removed from the clumps.
2. Minimum number of culms per clump will be maintained as per rule.
3. The debris will be cleaned within 1 mtr. radius of the clump and either removed out or control burnt.
4. A crescent shaped trench will be dug near the clump on uphill side to store rain water.
5. The exposed rhizome will be covered by soil, scrapping from the surrounding.
6. Stone packing around the rhizome will be given to retain soil on down hill side.
7. The cleaning materials will be supplied to the local people living inside sanctuary for their bonafide use and handicrafts. If no body is willing to take, the same may be burnt.

**6.3.8. 3. Area of operation in following coupes year wise**

1 <sup>st</sup> year( 2006) 5 <sup>th</sup> year(2010)	2 <sup>nd</sup> year(2007) 6 <sup>th</sup> year(2011)	3 <sup>rd</sup> year(2008) 7 <sup>th</sup> year(2012) 9 <sup>th</sup> year(2014)	4 <sup>th</sup> year(2009) 8 <sup>th</sup> year(2013) 10 <sup>th</sup> year(2015)
Jocub 4,5,6	Jocub 2	Jocub 1,11,12	Jocub 3
Raigoda 11,12,16	Raigoda 11,15,18	Raigoda 1,2,3,4,5	Raigoda 7,8,9,10
Tulka 1,2,8,9,10,11	Tulka 3,4,5	Tulka 6,12	Tulka 7
Purunakote 1,2,3,4,5 Purunakot PF	Purunakote 17,18,19,20	Purunakote 6,7,8,9,10,11	Purunakote 12,13,14,15,16
Takurgarh 1,2,3,4	Chhotamunda 2,3,4,5	Kuru 1,2,5,6	Kuru 3,4,7,8,9
Katrang 1,2,3,4,5 Katrang PF	Tikarapada 3,7,8,9	Tikarapara 1,2,4,5,6 Tikarapara PF	Katrang 7,8,9,10,11
Majhipada 1,2,5,6,7,8	Majhipada 10,11,16,17	Majhipada 3,4 Majhipada PF Hatidhara 23,27	Majhipada 12,13,14,15
Baghamunda 8,9,10,11,12,13 Baghamunda PF	Baghamunda 2,4,5	Baghamunda 3,6,7 Tainsi 2,3,4	Tainsi 1,5,6,7,8,9,10
Kumuri (P)	Kumuri (P)	Kumuri (P)	Tainsi PF

Jodum (P)	Jodum (P)	Jodum (P)	Jodum (P)
Padmatola 1,2,5,6,7,8	Padmatola 3,4,9,10,11	Arakhapada 1,2 Nandagada PF	Mahanadi PF Chhomundi PF Phadi PF
Mahanadi 1,2,3,4	Mahanadi 5,6,7,8	Mahanadi 10,11,12,13	Mahanadi 9,14,15,16,17

48 coupes have been earmarked in the sanctuary to be worked as above.

On an average in each coupe 1000 clumps deserve working. The working cost per clump has been estimated to be 2 mandays @ Rs. 70/-.

### **6.3.9. Communication & Infrastructure Development.**

Communication system includes road communication and VHF net work. The infrastructure includes building, vehicle, equipment and furniture.

#### **6.3.9.1. Road network.**

There are 221.5 km of Forest roads, 40 kms PWD road, 33.5 kms of Panchayat road. Roads are lifeline of the sanctuary, extensively used by staff for patrolling, used by visitors and local people. Importance of roads for protection of forest has been discussed in para 6.3. The importance for tourism has also been discussed in Chapter-7.



Respective departments are maintaining PWD and Panchayat roads. They will be allowed to repair and maintain the roads without further widening of the same as and when required.

All the forest roads are earthen roads. They are damaged during every rainy season. Ghat roads are totally washed out. Wooden bridges are damaged, culverts washed away. Nallas crossing the roads damage them severely. Therefore it is proposed that

1.	Every year 221.5 kms. of forest road will be maintained. Maintenance includes side bush clearance, side drain cutting, stone pitching wherever required, filling the earth in damaged places etc. Maintenance of 130 kms of forest road essential for forest protection has been mentioned in para 6.3.1.2.7. Balance 91.5 km of forest road will be maintained every year under management intervention.	length = 91.5 km
2.	At every nalla crossing point there should be stone pitched saucer shaped channel. At wide nalla causeway of cement concrete will be constructed.	Saucer shaped channels 100 nos. x 10 yrs and causeways 3 nos. X

		10 years.
3.	At ghat roads and steep gradient places on the road a permanent approach is required. 20-50 mt length of road at such vulnerable places will be made cement concrete so as to avoid heavy recurring expenditure every year.	0.5 km/ yr x 10 yrs
4.	Wooden bridges need replacement by RCC slab bridge	2 no/yr x 5 yrs
5.	Some new culverts / bridges will be constructed	2no /yr x 10 yr.

It is proposed to convert 130 kms of forest roads gradually metalled with special emphasis on plain portion and hilly portion.

The detailed estimate of Metalling with morum spreading & drainage facilities is furnished below:

- Length of Forest road .. 130 kms
- Length of Hill road .. 30 kms
- Length of Plain road .. 100 kms

(a)	For hill roads @ 1,20,000/- per km x 30 kms	Rs.36,00,000/-
(b)	For plain roads @ 80000/- per km x 100 kms	80,00,000/-
(c)	Construction of new culverts and RCC bridge @ 100000/- each x 30	30,00,000/-
(d)	Construction / repairs to causeways @	15,00,000/-

	50000/- each x 30	
(e)	Cement concreting at most vulnerable places 5 kms. @ 2 lakh	10,00,000/-
(f)	Cross drain with saucer channels 1000 nos. @ 1000	10,00,000
	Total	1,81,00,000/- (Rupees One crore eighty one lakh ) only

### 6.3.9.2. Building.

It is proposed to construct following new buildings and maintain annually the existing buildings.

#### For Office:

- New Annexure at Division office at Angul and Nayagarh.
- Maintenance of existing buildings.

#### For residence of staff:

- Maintenance of existing buildings.
- 6 New Forester Quarters and 6 new forest guard quarters centrally at Angul and 5 New Forester Quarters and 6 new Forest Guard quarters centrally at Chhamundia for stay of the family members of the field staff working in most interior part of sanctuary.

**For visitors:** ( Locations described in Chapter 7)

- Rest houses at all tourism complexes – 7 nos.
- Maintenance of existing F.R.H.
- Dormitory 2 nos.
- Interpretation hall – 2 nos.
- Amphi theatre – 1 no.
- Information centre – 2 nos.
- Watch towers – 6 nos.

**For Protection:**

- Barrack for protection squad – 5 nos. ( at Kumuri, Tulka, Labangi, Purnakote, Siaribhundi).
- 8 New VHF sheds

**For Animal health:**

- Veterinary hospital – 1
- Rescue centre - 1

**For Researchers:**

- Laboratory.
- Quarters for Researchers.

**6.3.9.3. Vehicles:**

Following new vehicles are required to be purchased besides maintenance of existing vehicles.

**For Protection:**

- One Commander Jeep.
- One closed Jeep (Marshal or Tata Sumo or Bolero like vehicle)

( Described in para 6.3.1.2.9)

**For Tourists:**

- Two Mahindra mini buses
- Two closed bodied Jeeps.

**6.3.9.4. Furniture:**

To promote eco-tourism and providing facilities to the tourists as well as to patrolling party, researchers, doctors, wooden, plastic, steel furniture are required which will be furnished as soon as construction of a building is completed.

**6.3.9.5. Equipment:**

Following equipments will be purchased.

- Tranquilizing
- Pathological testing
- Forensic testing,
- Arms and ammunitions.
- Fire fighting
- Survey
- Gadgets

#### **6.3.9.10. Disposal of seized timbers.**

There are revenue villages within the sanctuary, where the villages have their individual and community right over land and property. Sometimes it is seen that these inhabitants are indulged in illicit felling and hoarding of timber in their village premises or tanks or on roads or in nallas. During village raid, house searches, many timber are seized and cases are booked. These seized timber are recovered and brought to the custody of forest officers. Unless these timber are disposed off there will be chances of theft, fire, pilferage and shortage of storage space. Looking in to these practical problems it is proposed to dispose off seized forest produces by way of delivering them to the State owned Forest Corporation.

#### **6.3.11. Special attention in Buffer Zone.**

Buffer zone around the sanctuary has been determined in to the zone of influence over the sanctuary. This includes forest areas out side the sanctuary but frequently used by wild animals for their feeding, breeding and migration. Similarly some villages have been included in the buffer zone .The people of which used to depend on sanctuary for their daily requirement. Buffer zone has been constituted taking the forest areas of adjoining territorial divisions who are guided by approved working plans. Working Plan recommends timber and bamboo working in their forest areas which have been included in the buffer zone of this management plan. Therefore it is essential to have check on activities like tree felling, hunting, poaching, mining as well as protecting the breeding areas of important species and migratory path of long ranging animals. Activities described in Working Plan like forest protection measures, fire control measures, water availability and other similar activities will also be implemented in the buffer zone of the sanctuary.

### **6.3.12. Removal of degraded teak plantations:**

There are 27.29 Sq. Kms. teak plantations area in the sanctuary out of which majority area have been found degraded due to repeated illicit felling. Poor quality coppice shoots mingled with eupatorium under growth are noticed in those areas making them useless for the wild animal use. Therefore it is suggested to convert such degraded plantations into meadows and fodder tree plantations which will harbour many herbivores. The old teak stumps will be uprooted mechanically, coppice shoots will be cut from the base and the stumps will be treated with concentrated inorganic acids to discourage further coppicing. Eupatorium and other undesired species will be uprooted manually and then the area will be ploughed ,hybrid grass slips will be planted , tree fodder species will be raised towards the border of the meadows, soil conservation measures if required will be undertaken there. Every year, 5 Ha. Of such plantation will be converted into meadows and fodder plantations.

### **6.3.13. Special intervention for Giant Squirrel:**

Giant squirrel is noticed through out the sanctuary. They need continuous canopy cover for their forage and movement, but it is noticed that forest roads passing across the sanctuary fragments the continuous canopy cover at some places. It is suggested to link the canopies, over the forest roads, joining both sides by long bamboo or poles at 20 feet above ground level. Road side tall trees can be connected by such method to facilitate movement of Giant Squirrel the places where tall trees are not available on road side, Banyan (*ficus bengalensis* )

will be planted on either side of road in such areas. Banyan trees bear fruits for at least six months in a year which is mostly preferred by the Giant Squirrels. When the planted banyan trees will grow tall, the spreading branches will not only connect the canopy as a over bridge on the road, but also provide sufficient food material for them. There are 226.5 Kms. of forest road, 40 Kms. of PWD road and 33 Kms. of Panchayat road inside the sanctuary which need such type of treatment over the plan period. There fore it is suggested to cover 30-40 Kms. per year such roads every year.

#### **6.4. Monitoring mechanism.**

Monitoring of habitat conditions will be taken up by the authority in every month to ascertain the trend .Similarly a feed back mechanism will also be developed. Every month the DFO shall take stock of the various trends of habitat conditions , animal migration and breeding etc. through various review meetings of ACFs and Range Officers, guide enforcement and regulate activities in accordance with the findings of the said review meeting. The authority will also systematically keep the record of relevant observations on specific parameters to establish trends in different zones of the sanctuary including buffer and calibrate management and enforcement in response to the perceive trends. The detail monitoring protocols, parameters and indicators of trends have been vividly described in **Chapter- 9**.



## CHAPTER – 7

### TOURISM, INTERPRETATION AND CONSERVATION EDUCATION

#### 7.1. General.

Eco-tourism is a travel to natural areas with little or no impact on the environment, that will conserve the environment and will sustain the well being of local people in the long run. It reflects the increased environmental awareness and the desire for more authentic natural and cultural experience. During 2000, Eco tourism in protected areas and in wilderness was recognized as one of the fifteenth thrust areas of the Ministry of Environment and Forests.

Wilderness of Satkosia attracts about 25,000 to 35,000 Eco-tourists annually. The visitors were 34,015 during 2003-04, 37,818 during 2004-05, 42,318 during 2005-06 and 41,320 during 2006-07. Bengalis are predominant outsiders who visit Satkosia other than the usual Oriya visitors. Most of these visitors are however day visitors and their basic motive is picnic and amusement, preferably during winter season. A rush is there for getting reservation in Forest Rest Houses at Tikarpara, Labangi, Tulka and Baghamunda during that period. In Satkosia, besides camping, the activities- on- offer to eco-tourists are boating in the gorge, trekking in forest, hills and on river banks, bird watching, elephant riding, night safari, and watching wild animals from watch towers and log houses. CBOs (community based organisation) namely Tikarpara Parivesh Paryatan Samiti (TIPPS) at Tikarpara and Paribesh at Baliput are there to provide services to the visitors. Satkosia Eco-tourism Society (SES), a govt. owned society is going to be registered soon to implement the eco-tourism projects in the sanctuary. But infrastructural facilities, interpretive services are not sufficient for them. There are many thrust areas which need intensive attention.

## **7.2. Objectives.**

1. To increase environmental awareness, conservation education on biodiversity values of Satkosia Gorge Sanctuary.
2. To empower local communities to manage eco-tourism and generate incentives for conservation through alternate and additional livelihood options.
3. To provide visitors with a personal experience on cultural values, traditional and ethnological knowledge of tribes in a way that leads to greater understanding and appreciation about the inmates of the sanctuary.
4. To divert more tourists from golden triangle of Orissa, i.e. Bhubaneswar-Puri-Konark to Satkosia Gorge Sanctuary.

## **7.3. Problems.**

### **7.3.1. Problems for tourists.**

1. Restricted access to important places of Satkosia Gorge Sanctuary and inadequate access facilities to it.
2. Lack of standard and adequate accommodation facilities.
3. Lack of basic facilities for camping .
4. Lack of publicity and awareness.
5. Low animal sighting chance.
6. No linkage between other nearby tourist places.
7. Lack of tourism package.
8. Lack of opportunities for children.
9. Lack of proper interpretive services.
10. Inadequate staff.
11. Lack of Training / orientation on eco-tourism.
12. Lack of guide.

### **7.3.2. Problems from tourists.**

1. Accumulation of plastic and polythene garbage, use of sound boxes.
2. Consumption of liquor and non-vegetarian food items inside sanctuary resulting accumulation of garbage and making nuisance.
3. Disturbance to wild animals by picnic parties.
4. Increase of illegal activities and violence during peak period.

### **7.4. The Strategies.**

The strategies have been enunciated to overcome the above problems. There are a lot of opportunities to explore tourism in Satkosia Gorge Sanctuary. At present Tikarpara complex is developed to some extent and preferred by tourists and picnickers. So new areas will be included and the existing areas can be improved

Following 3 major strategies will help in promotion of eco-tourism in Satkosia Gorge Sanctuary.

1. Identification of tourism zones.
2. Development of infrastructure and capacity building.
3. Interpretation as a tool for visitor management.

The total area of the Ecotourism zone is 28.04 sq. km.

#### **7.4.1. Identification of zones.**

Following sub-zones are now earmarked for development of eco-tourism. The justification and constitution of the sub-zones are discussed below.

##### **1. Tikarapara :**

Tikarpada is located on the bank of river Mahanadi and is 60 kms away from Angul, being connected by a PWD road from Badakera on N.H.42., which is at 11 km away from Angul towards Sambalpur. It is the most preferred tourism site because for Boat riding and sighting of Muggers and gharials.

This zone covers Mahanadi Gorge in between Baniajore nalla and Ramagaon nalla, part of Tikarpada village, FRH complex, Reptile rescue centre, and 20 Ha. area of

Tikarpada RF Compartment No.5. Total area of this sub-zone is 327.5 Ha. Western part of comp.-5 of Tikarpada RF, which is close to river Mahanadi, measuring 20 Ha. in area is carved out as a sub compartment 5-a for development of eco-tourism infrastructures.

## **2. Purunakote- -Hatigiriya sub-zone:**

Sighting of wild animals, especially elephants other herbivorous is best at Hatigiriya water hole and Nandini nalla near Purunakote, which is situated at 50 km on the Badakera-Tikarapara PWD road. Watch tower and salt lick are there at Hatigiriya. Visitors can easily go to these places as approach roads are also there. FRH and PWD IB are available for booking at Purunakote. This sub zone comprises revenue villages like Purunakote, Gopalpur and Purunakote RF Compartment No.9, Kuru RF Compartment No.9, Majhipara RF Compartment No.13,14,15. The area of this sub-zone is 1435.58 Ha.

### **1. Labangi Sub-zone:**

Labangi is one of the coolest places in Satkosia Gorge Sanctuary. It is very calm and quiet, and looks like a hill station. Hence the FRH at Labangi is mostly preferred by the visitors. Kantarasingha water hole area, located at 3 km on the way to Raigoda from Labangi, is rich in wild animals like Gaur and Tiger. Mega herbivores can be sighted from the Watch tower and ungulates at salt lick. Labangi to Raigoda forest road nearly 8 km is a Nature trail. Labangi is approachable from Pampasar, the entry point of Satkosia Gorge Sanctuary, by a forest road of 8 km.

This sub zone consists of Labangi revenue village, Jokub RF compartment No.5(P), 6(P), Bolanga RF Compartment No.12(P), 11(P) i.e. South side of the forest road. The area of this sub-zone is 401.50 Ha.

## 2. Baliput-Badamul complex:

Badamul and Baliput are situated on both sides of river bank of river Mahanadi. Badamul is connected to Nayagarh by PWD road. Baliput is connected to Nararsinghpur by PWD road. Boat riding and watching of crocodiles on the bank of river Mahanadi are major attractions. There are FRH at Badamul and Baliput. Hill climbing to the shrine of Goddess Baigani is a thrilling experience for the ecotourists.

This sub zone consists of revenue villages like Kamaladihi, Baliput, Badamul, South Eastern part of Jodum RF 'A' and Mahanadi river portion. The area of this sub-zone is 527.5 Ha.

### Abstract of Tourism Zone

Sub-zone Sl. No.	Name of Sub-zone	Area in Ha
1.	Tikarapara	327.50
2.	Purunakote-Hatigirija	1435.50
3.	Labangi	401.50
4.	Baliput-Badamul	527.50
	<b>Total</b>	<b>2692.00</b>

#### 7.4.2. Infrastructure Development.

##### 7.4.2.1. Infrastructure Analysis:

###### 7.4.2.1.1. Accommodation:

There are 11 Forest Rest Houses, 4 PWD IBs and 1 Irrigation IB inside Satkosia. On an average 2 suites are there in each Rest house. So 64 visitors can be accommodated for night halts. The detail list is given in **Appendix-11**. The peak period of tourist flow is from November to February. During this period heavy demand for Rest houses is there.

The FRH at Purunakote, Pampasar and the PWD IB at Jagannathpur are in dilapidated condition. They need to be repaired. Other Rest houses are also not up to the green rating. The camping facilities are proposed to be created for following number of eco tourists at these locations. At Tikarpada-22, Labangi- 12, Baliput- 8 and at Chhamundia- 8, Total-50. The existing FRHs at Tikarpada, Labangi, Baliput and Chhamundia need to be renovated and refurbished. The kitchen –cum- dinning hall and attendant rooms existing close to the FRH at Tikarpada need renovation.

Since some tourists prefer Tented accommodation, ten Swiss cottage tents have been put to use on Ramgaon sand at 2 km down stream of Tikarpada. There are two beds in each tent with provision of water containers and toilet tents attached to each tent. Such accommodation will continue every year during the winter season.

4 Nos. of Ethnic cottages 2 each at Labangi and Purunakote will be constructed with an estimated cost of Rs. 2.50 lakh each.

Besides the existing accommodation facilities, 3 nos. of 20-bedded dormitories each at Tikarpara and Baliput are to be constructed with provision of drinking water facility, toilet & bath room with solar home lighting system. 5 log huts at Tikarpada, 4 at Labangi, 4 at Baliput and 4 at Chhamundia fitted with solar home lighting system and drinking water facility will be constructed for nature camping. At Tikarpada the log huts will be constructed on the top of the hill behind the F.R.H.

#### **7.4.2.1.2. Communication (Roads):**

There are many scenic places in inaccessible areas and hill tops, which need to be visited by the eco- tourists. These places need to be connected by roads, footpaths & trails for easy movement of the visitors. During this plan period, 100 km. of such trails, footpaths (20 units) have been proposed for development. Sit outs at suitable intermediate

locations, umbrella mandaps at the end of trail will be constructed. Signage on suitable tree trunks describing the names of trees, animal presents and other available prehistoric objects will be fixed. The cost per unit is estimated to be Rs.1.00 lakh.

Two important forest roads namely Tikarpada to Baliput 18 kms. and Pampasar to Labangi 8 Kms. will be made all weather by improving them into metal roads and constructing RCC bridges where ever necessary. The approach road to the watch tower at Kantarasingha will also be improved.

#### **7.4.2.1.3. Vehicles for tourist movement:**

Tourists are using hired jeeps from taxi stands of Angul, Nayagarh, Cuttack or Bhubaneswar to visit the sanctuary. But after entering in to the sanctuary they are not getting any suitable conveyance to go to interior areas to enjoy the nature. No vehicle is available with the park authority to carry tourist to interior places.

Therefore, 4 tourist Vans are to be purchased departmentally , to be stationed at Pampasar, Purunakote and Tikarpada for the visitors to use them on hire.

- One vehicle at Pampasar will cover Labangi and Kantarasingha area.
- One vehicle at Purunakote will cover Purunakote, Hatigirija and Pointiri .
- Two vehicles at Tikarapara will cover Kandhaida, Kadalikhola, and Baliput, areas.

The societies like TIPPS and ‘Parivesh’ will be encouraged to purchase / hire 2 more jeeps for use by visitors on payment.

#### **7.4.2.2. Community based tourism.**

1. 2 NGOs registered under Societies Registration Act, 1860 are already functioning. They are Tikarapara Parivesh Paryatan Samiti (TIPPS) at Tikarapara and PARIVESH at Baliput, who are rendering services to the tourists. Two such community based societies

will also be constituted each at Labangi and Purunakote and will be registered under the societies Registration Act, 1860, who will also render services to the visitor like TIPPS. The societies can raise their Developmental fund by collecting guide fees, service fees and other fees. They can receive donations and aid from external sources like UNDP, WWF etc. for development of the sanctuary and for eco-tourism. One apex body above these 4 societies will be constituted at sanctuary level in the name of Satkosia Ecotourism Society (SES), where the DFOs, other district level officers, local environmentalists, nature lovers and elected members of 4 societies will be the members. SES will be registered under the Societies Registration Act and receive funds from various agencies and governments to promote eco-tourism in the Sanctuary. SES can outsource man power, resources and materials to implement the project.

2. **Eco-Guide:** The literate members of these societies, who are conversant with the flora, fauna and landscape of the locality can act as Eco Guides. Each group of visitors will be accompanied by a trained eco-guide. The local Jeep drivers can also act as Eco-Guides. Therefore regular trainings to the Eco-guides are to be organised. They are to be supplied with ID cards, uniform, binoculars, spotting scopes, etc.

3. **Capacity building of Community Based organizations:-** Capacity building of Community Based organizations will be undertaken regularly and they will be trained on managing the tourists, dealing with the tourists and providing other services.

#### **7.4.2.3. Package Tour.**

Travel agencies, hotel owners, tour conductors will be encouraged to organise package tours for the visitors. The visitors from Puri, Konark, Bhubaneswar and Sambalpur can also be diverted to Satkosia. This is possible when the tour conductors



earmark a day to spend in Satkosia within their schedule or package. Satkosia can be included in Kapilash- Saptasajya-Joranda-Saranga tour package.

Travel Agencies at Angul can be contacted to arrange a package of 2 days tour to Satkosia including costs towards travel, stay, fooding and site seeing. They will bring tourists from Angul and drop them either at Angul or at Bhubaneswar after 2 days of visit.

#### **7.4.2.4. Opportunities for children.**

Three eco-parks for children are proposed to be established at Tikarapara, Balliput and Labangi for awareness of the children visiting the sanctuary. Two children's parks have already been established at Tikarapara & Baliput, which need to be modified into Children's Nature Education and Conservation Centres. The interpretation centre at Tikarapara needs further improvement with funny exhibits for children.

#### **7.4.2.5. Elephant Camp:-**

One elephant camp is already established near the Range Office, Tikarpada for providing elephant riding to the ecotourists coming to the sanctuary. 2 elephants have been brought from Nandankanan for this purpose. Their maintenance is required along with the wages of 4 mahouts.

#### **7.4.2.6. Other Basic facilities.**

Provisions for basic facilities like food, drinking water, toilet, canteen, shade, sitting places are essential for the tourists. These basic needs can be supplied to them through the members of the societies. Infrastructural supports are to be provided by the Park authority.

Vehicle parking area at Tikarpada will be identified in revenue land and developed for better trafficking during peak period. The landscape of camp area at Tikarpada will be beautifully designed to give an aesthetic look.

#### **7.4.2.7. Improvement in Animal sighting.**

It is one of the most important aspects to be looked into. Unless the chances of animal sighting are increased, the inflow of visitors can not be ensured. Better chances of animal sighting can be achieved by adopting the following measures.

- a) Development of visitor paths and view lines.
- b) Creation of water holes, salt licks near road or visitor path.
- c) Construction of watch towers near water holes / water reservoir at a safer distance.
- d) Grass land development near tourist complex.

Wild animals are rich in tourist sub-zones like Labangi, and Purunakote. 5 to 7 kms of forest road or extraction path or foot path in each of the such sub-zones can be repaired to make them jeepable. 50 mtr on either side of the visitor road is to be cleared leaving only poles and tree growth. When shrubs, weeds, herbs will be cleared, sighting chances will improve. Some view lines perpendicular to the visitor road are also to be opened with 20 – 30 mtr width, where only under-growths need to be removed. The gap between 2 view lines will be 200 – 300 mtrs. The length of view line will be maximum 200 mtr. Fodder trees coming within view lines will be pollarded at 1.5 mtr height to attract browsers. Small concrete artificial water holes and salt licks can be provided along the road side to attract wild animals. If water goes dry up, it can be brought by tankers from nearby water reservoirs, river Mahanadi or from bore wells by using solar operated pumps. Provision of such water holes has already been discussed in **para 6.2.1.4.4**

Presently, watch towers are very close to the water holes. Usually animals feel shy to come to a water body when they sense presence of human being near to them. So it is proposed to construct new watch towers in every tourism sub zone and

in animal abundance area at least 100 mtr. away from the water body. The watch towers should be made up of RCC, well protected and camouflaged. Grey cement colour should be put on them instead of bright colours. It is proposed to construct 8 such more watch towers at Pointiri, Katrang ghat, Takarsingha, Raigoda, Padmatola, Kadalikhola(2<sup>nd</sup>), Nadapathar and Rautabahal. Watch towers are also useful to monitor the health of animals near water bodies.

Herbivores like spotted deer, wild pig, peafowl use to come closer to human habitation to get rid of predators. It is seen in many parks that herbivores spend whole night near rest houses used by tourists. Similarly in Satkosia meadows in small patches can be developed near Forest Rest Houses at Tikarpada, Labangi and Baliput replacing weeds by planting slips of palatable grasses. After establishment of meadows, subsequent controlled burning may help in sprouting of grass shoots, which attract more herbivores. About 1 acre of such land can be developed in each of the above 4 sub-zones.

#### **7.4.2.8. Attended Interpretation.**

- a) **Information centre:** 3 information centers at entry gates of Pampasar, Baliput and at Tikarpara will be established, where one Forest Guard will be posted to provide necessary information to the visitors about important places, features of the sanctuary, admission charges and available facilities etc.
- b) **Eco-Guides:** The literate youths of Tikarpara, Baliput, Labangi, Purunakote will act as Eco-guides. They will accompany the group of visitors either on vehicle or on Nature camp or in trekking and explain about significance of

- Satkosia and its elements. Payment to Eco-guides will be made through the registered societies already formed.
- c) **Audio visual show:** At Tikarpada Audio visual systems are already available. Film shows on wildlife will be displayed on Amphitheater which will be created. One LCD Projector with large screen will be purchased for film show to large group of visitors. A documentary film on Satkosia Gorge Sanctuary will be prepared by reputed Film Makers / Photographers. CDs of the film will be sold to the visitors. Generator sets will be purchased for all the tourist places. Video film shows will be displayed in night where the visitors make night halts.
- d) **Ecotourism Cell :-** One ecotourism cell in the office of DFO, Satkosia Wildlife Division, Angul will be opened being well furnished with office stationeries, computer, phone, fax, internet etc. 2 naturalists and one manager will be posted to provide information to the visitors. Printed brochures, stickers, leaflets, pamphlets, eco-tourism guide book etc. will be made available there. Booking of rest houses, tents, dormitories and log huts will be made by the them even through internet and phone.

#### **7.4.2.9. Non attended Interpretation.**

##### **a) Signages:**

##### **i) Outside the Sanctuary:**

Signages of large hoarding say 8' x 4' or 10' x 8' will be erected at Bus stand, Railway station and N.H. road side of Angul, Dhenkanal, Boinda, Puri, Konark and Sambalpur.

ii) **Inside the sanctuary:**

On the sides of main PWD / Forest Roads within the sanctuary, signages of 5' x 3' or 4' x 3' size will be displayed narrating various features of the sanctuary and administrative instructions or traffic regulations and Relief map of the sanctuary.

iii) **At tourist sub-zones :**

Administrative instructions, details of available facilities with direction, map of sub-zone will be displayed with signages of 3' x 2' or 2' x 1'-6" size.

**b) Publications:**

Colourful, attractive and informative newsletter, leaflet, hand bill, brochures will be printed and circulated to all the visitors, hotel owners, tourism offices of Angul, Cuttack, Dhenkanal, Sambalpur, Bhubaneswar, Puri and Konark. These publications will be made available at Divisional Office, Range Office and Information centres. Every year there should be a publication.

**7.4.2.10. Nature trail.**

There should be at least one nature trail in each tourism sub-zone. The length of a trail will be 1.5 – 2.0 kms. Speaking signages near the important features will make the trail lively. Sit outs will be constructed on the trail sites. A parking space will be made at the entrance of the trail.

**7.4.2.11. Interpretation Centre.**

The existing interpretation centre at Tikarapara is inadequate and underdeveloped. It needs modernization in consultation with Centre for Environmental Education (CEE), Ahmedabad or Wildlife Institute of India, Dehradun. The important items in the interpretation centre will be pictorial, 3 dimensional, question-answer type. The hall should be well lighted and well ventilated.

#### **7.4.2.12. Amphitheatre.**

An amphitheatre will be constructed with brick masonry in front of the Forest Rest House, Tikarapara facing towards river Mahanadi. Audio visual display, camp fire, cultural programme will be arranged there for creating awareness.

#### **7.4.2.13. Reptile Rescue Centre.**

Gharial Research and Conservation Unit (GRACU) cum Mini zoo of crocodile at Tikarpada is now changed to Reptile Rescue Centre by the Zoo Authority of India for fresh water reptiles and terrapins. Injured, recovered and rescued reptiles from different locations and ponds of adjoining areas will be kept here for treatment & quarantine purpose. After their satisfactory health improvement, they will be released to water of river Mahanadi.

The enclosures, fencing, water supply system and all other infrastructure will be repaired and maintained. There will be provision for feed and medicine for the rescued animals.

This rescue centre will be more educative in gathering knowledge on different aquatic reptiles and their behaviour. This will be an attraction for the visitors.

#### **7.4.2.14. Hill trekking.**

Many young visitors, students, NCC cadets are showing interest in hill trekking. Simultaneously they will also gather knowledge on various flora and fauna of the sanctuary.

There are 3 such sites near tourist complex.

1. Baigani pahad – 3 km trekking from Kamaladiha to Baigani deity. It is located in Baliput sub-zone.
2. Sua sari damak – 4 km hill trekking from Labangi in Labangi tourism sub-zone.
3. Labangi-Chuanri-Tulka- 14 km. in Labangi tourism sub-zone.

The local people (Eco-guides) will accompany them with all equipments of hill climbing/ trekking.

#### **7.4.2.15. Conservation Plots.**

In each tourism sub-zone there will be one conservation plot of 5 ha of Medicinal plants. The Vaidya Community (group) will identify such plots, identify the important Medicinal plants available there. The plot will be demarcated, fenced, labeled. Fire lines will be traced around the plot. All silvicultural operations like cleaning, tending, soil working will be undertaken for in-situ conservation. Plants will be labeled indicating their usefulness.

One Herbal Medicine Centre will be opened in each sub-zone, which will be managed by local Vaidyas, who will give herbal treatment to the visitors and explain on medicinal values of plants.

#### **7.4.2.16. Nature Camp.**

Group of visitors from different Institutions, organisation are showing interest in spending time well inside the natural forest, to get rid of all interference and disturbances. Near Majhipada nalla and near Ramgaon nalla in Tikarapara sub-zone such sites are available where nature camps can be organised. They can be taken for trekking to nearby areas. All logistic supports will be provided to them.

#### **7.4.2.17. Picnic spots.**

Besides the eco-tourists, a large number of picnic parties are coming to the sanctuary during November to February. They are selecting the sites within the sanctuary area as per their choice. As a result garbage, noise and disturbance to wild animals are increasing. Since it is not possible to impose ban on picnic parties, it is wise to provide space for them. They mostly prefer Tikarapara, Pampasar, Labangi, Baliput and Sitalpani. So picnic spots are to be demarcated for them with fire lines. Vehicle parking space, cooking space is to be distinctly earmarked with sign boards. The picnic sites should be preferably very close to the Forest Rest House and source of water.

The volunteers of registered societies will take care of picnic parties, maintain law and order, clean the site, and provide them all their requirements of utensils, fuel wood, drinking water, ration, etc. for which they may collect fees/ charge from the picnic parties.

#### **7.4.2.18. Orientation of staff.**

Managing tourists require special skill and bend of mind. Tourists should be treated as our guests and simultaneously they should be regulated and managed. Vandalism is to be checked. The tourists should go back with sweet memories and wilderness experiences of the sanctuary so that they will like to visit the sanctuary again and again. Therefore all the staff and NGOs working in the sanctuary will undergo repeated orientation trainings on handling the tourists, identifying their need and finding ways to meet them.



#### **7.4.2.19. Boating facilities.**

One 20 seater and two 10 seater fibre boats are in use by visitors on hire for boating in river Mahanadi and to watch crocodiles, terrapins and forests on both sides of gorge. One boat has been stationed at Baliput and two are at Tikarapara. But drivers / Boatmen are to be appointed temporarily on daily wage basis during November – February. The visitors will avail the boat riding facility on payment of fixed price per hour. The wages to the driver, boatmen will be paid from the fees collected from the tourists. The registered societies will be asked to maintain the boats and the working cost. 2 more 20 seater boats will be purchased to promote ecotourism. Local boatmen will also be engaged on daily wage basis.

#### **7.4.2.20. Angling.**

Angling to capture fishes from river Mahanadi will be allowed on payment of fees as per rule, which will attract more tourists to the sanctuary.

#### **7.4.3. Regulation, Monitoring and Evaluation.**

Following aspects need to be monitored.

1. Booking ticket at entry places.
2. Maintaining register on details of visitors.
3. Record of hourly flow of visitors in a day.
4. Number of visitors staying at night.
5. Sanitation in and around Tourist complex.
6. Vehicle movement inside park.
  - Fixing the time- 6 AM – 8 AM, 4 PM – 7 PM
  - Fixing the time for each vehicle.
  - Fixing the route for each vehicle.
7. Recording the time and place of animal sighting.
8. Prevention of fire incidents.

- Not allowing Match box, lighter, cigarette, Bidi inside the sanctuary.
- Cutting fire line around complex.
- No picnicking outside the earmarked sites.
- Signages to prevent fire.
- Develop communication net work to detect fire.
- Alertness of fire fighting squad.

9. Places for parking private vehicles and monitoring their movement.

10. Movement of vendors and their number inside the complex.

11. Movement of visitors inside the complex.

- No one should be allowed to go inside the sanctuary without a registered guide.

12. Visitor analysis.

Regular monitoring is required to know,

- How many visitors visit.
- What nation / State he is representing.
- What income group they belong.
- What for they come.
- How much time they spend in Sanctuary.
- Where do they stay (Hotels etc. outside the sanctuary).
- How much they spend.

Several years' statistics will give annual growth rate and will suggest what additional facilities will be set.

13. Training to staff and guides.

It is essential to monitor the number of trained staff and guides present in the sanctuary for helping tourism.

14. Regulation of fund flow and expenditure.

15. Monitoring of fees collection and keeping account.

16. Adventure tourism.

17. Linkage of SGS with other nearby tourist places.

18. Ensuring green rating, standard, quality of service and infrastructure.

19. Package tour organised by private travel agencies and hotel managers.

20. Closing and opening of the tourist complex.

- The park will remain open during October to June.
- Closed during rainy season.

21. Feed Back.

Visitors' book will be available at all prominent places like FRH, entry gates, where the visitors will write their feedback for better management and improvement in tourist facilities. Feedback can also be collected by preparing a questionnaire and getting their answers while they are returning from the park. One Forester and one Forest Guard or a Daily wage skilled person will be exclusively engaged at every tourism complex to look after all day to day affairs of the complex.

Impact Analysis.

It is very much essential to monitor carefully the impact of tourism over the animal behaviour, biodiversity, and habitat cover. If any adverse impact is noticed the tourist pressure is to be reduced. Impact of vehicular traffic on PA is also to be monitored.

Carrying capacity.

The physical carrying capacity of the tourism places and ecological carrying capacity of forest area are to be monitored carefully so that tourism should not cause any disturbance to the wildlife.

## 22. Monitoring Picnic parties.

During November – February, many picnic parties visit the sanctuary. But the peak period is 15<sup>th</sup> December - 15th January when the picnic parties from local villages, near by villages, towns, schools, colleges usually come. They are used to drinking alcohol, dancing with music from loud speakers and sometimes fight among themselves breaking the peace and tranquility of the sanctuary. So there will be deployment of Police Force in the picnic spots at Tikarpada, Pampasar and Labangi to maintain law and order. They will not be allowed to use loud speakers or sound boxes for music. But small tape recorders or walkmen can be allowed to operate with low volume. The cooking site and parking site will be distinctly earmarked and instructions be followed. Volunteers of societies are to be engaged to enforce the instructions. The garbage is to be cleaned every day. Ladies picnic groups will be given separate picnic sites with toilet facilities with lady attendants. Entry fees are to be collected at the entrance of picnic sites for providing different services.

## **CHAPTER – 8**

### **ECODEVELOPMENT**

#### **8.1. Objectives.**

##### **GOAL:**

To reduce the adverse impact of villagers and their biodiversity depleting livelihood practices on the Satkosia Gorge Sanctuary through peoples participation.

##### **OBJECTIVES:**

1. To mitigate biotic pressure and to reduce the resource dependency of local communities on the forests of Satkosia Gorge Sanctuary.
2. To generate alternate livelihood options for the local communities.
3. To enhance water availability for micro irrigation in and around the Sanctuary to enhance the food security.
4. To build effective local institutions for proper implementation of eco-developmental activities.
5. Development marketing infrastructure to avoid middle man through formation of federations.

#### **8.2. Specific Issues (Problems).**

1. Illegal cattle grazing in Satkosia Gorge Sanctuary.
2. Scarcity of water in the villages.
3. Lack of alternative livelihood options.
4. Low agricultural productivity.

5. Lack of effective community institutions.
6. Man – animal conflict.
7. Over exploitation of fuel wood, bamboo and timber.
8. Inadequately trained and over burdened staff.
9. Inadequacy fund.
10. Poor health condition of the inhabitants and domestic animals.

### **8.3. Broad strategies.**

1. Raising Farm Forestry and grazing land on revenue and private land to get fuel wood and fodder.
2. Enhance irrigation potential for productive agriculture.
3. Supply of agricultural inputs on subsidy.
4. Promotion of eco-tourism.
5. Promotion of traditional knowledge on handicrafts, herbal medicine and pharmacy.
6. Supplying raw materials for traditional handicraft and artisans.
7. Improve marketing linkage.
8. Creation of employment opportunities.
9. Awareness education.
10. Capacity building.
11. Health camps for man and their domestic animals.
12. Building of effective local institutions.
13. Mitigation of Human – Wild animal conflict

#### **8.4. Area of Operation**

The area of operation constitutes all the Revenue villages coming within the boundary of the sanctuary excluding those covered under Tourism zone and Restoration Zone and includes villages in Buffer zone. Total area under this Ecodevelopment Zone is 263.016 Sq.Kms., i.e. 183.746 in core and 79.27 Sq.Kms in buffer.

Following Revenue villages / hamlets are coming within Core zone.

**Satkosia Wildlife Division:** Kunjabanapur, Mahigarh, Jayamangalpur, Chikan khandi, Sanagaon, Badagaon, Odasinga, , Regeda, Basantpur Hinjalkhan, Jaymangalpur, Jagannathpur, Marudi, Jillinda, Janisahi, Dhanadhip, Shyamapur, , Siaribhundi, Luhasingha, Tentulipadar, Dolemunde, Talabijipur, Kutulusingha, Limbadihi, Nalimera, Kussingha, Kudasingha, Karadasingha, Jamudoli, Jharpada, Malisahi, Dudhinali, Nuagaon, Kaintara, Kamaladihi, Panchama, Paikregeda, Satyajajapur, Dhanurjayapur, Regeda, Talasahi, Mandania, Ranibhuin, Kaintara, Majhipada, Beherasahi, Ranimunda, Karadapada, Hatibari, Katarnga, Badakheta, Salor, Jagannathpur , Takarsingh, Nuabhuin, Kulangi, Hinsirida, Pampasar, Talasira, Jocub, Tarava, Asanabahali and Bhurkundi.

**Mahanadi Wildlife Division :** Kumari, Badanandagada, Atalasar, Bhabapur, Sankari, Hatigada, Ghungurupada, Bodhamba, Nuapada, Sunakhandi, Semigora, Sitakhanda, Kutibari, Hinjal, Geredisahi, Sriraju, Padmatola, Kuturi, Sagadabhanga, Malasapadar, Bahali, Salaraganda, Musugoda, Kandha, Jillinda, Chhemundia, Bentapada, Haripur, Iswarpur, Raigadia, Maskajholi, Barapali,

Kanipokhari, Ranikhola, Jasipur, Ranigaon, Dhobabarei, Kambhirakhani,  
Bhagamunda.

Name of the villages /hamlets with area and population and year of settlement of the  
villages of Satkosia Gorge Sanctuary.

SATKOSIA WILDLIFE DIVISION, ANGUL .

ANGUL DISTRICT.

Sl.No.	Name of the village/Hamlet village	District	Area in Ha.	Population	Year of settlement
1	2	3	4	5	6
1	Takarsinga	Angul	347.65	498	1962
2	Kulangi	-do-	176.85	300	1962
3	Jagannathapur	-do-	688.75	1171	1962
4	Hinsirida	-do-	156.37	269	1962
5	Kumbharabhuin (Hamlet)	-do-	-	-	1962
6	Ramimunda	-do-	517.00	138	1962
7	Pampasar	-do-	172.49	171	1962
8	Jocub	-do-	205.62	74	1962
9	Badakheta	-do-	90.24	100	1962
10	Salor	-do-	123.40	90	1962
11	Purunakote	-do-	358.39	766	1962
12	Chhotkei	-do-	234.61	434	1962
13	Tulka	-do-	225.01	455	1962
14	Majhipada	-do-	383.87	170	1962
15	Beherasahi	-do-	237.87	177	1962
16	Goindi	-do-	82.74	308	1962
17	Karadapada	-do-	150.91	415	1962
18	Hatibari	-do-	281.80	443	1962
19	Tikarpada	-do-	152.07	684	1962
20	Katrang	-do-	397.39	276	1962
21	Gopalpur	-do-	140.66	316	1962
22	Raigoda	-do-	172.43	185	1962



23	Tarava (F.V.)	-do-	126.00	250	1910
24	Asanbahal (F.V.)	-do-	32.00	114	1933
25	Bhurkundi (F.V.)	-do-	111.00	189	1914
26	Doruha	-do-	216.91	101	1962
27	Malisahi	-do-	84.58	201	1962
28	Jamudoli	-do-	242.81	640	1962
29	Kudasinga	-do-	54.63	93	1962
30	Nilamara	-do-	55.04	76	1962
31	Limbadihi	-do-	162.68	488	1962
32	Luhasinga	-do-	359.36	771	1962
33	Dolamundi	-do-	89.44	191	1962
34	Karadasinga	-do-	78.51	267	1962
35	Ragudisahi ( Hamlet)	-do-	-	-	1962

**CUTTACK DISTRICT .**

1	2	3	4	5	6
36	Baliput	Cuttack	199.36	284	1995
37	Silati (Hamlet)	-do-	-	-	1995
38	Kamaladihi	-do-	220.08	2181	1995
39	Ranibhuin	-do-	189.32	511	1995
40	Panchama	-do-	901.89	713	1995
41	Kaintara	-do-	170.65	215	1995
42	Nuagaon	-do-	406.00	265	1995
43	Paikaregeda	-do-	748.87	418	1995
44	Satyajayapur	-do-	686.47	530	1995
45	Dhanurjayapur	-do-	638.97	412	1995
46	Sampur	-do-	221.42	130	1995
47	Kunjabanapur	-do-	40.70	192	1995
48	Janisahi	-do-	156.74	1149	1995
49	Regeda	-do-	182.26	1512	1995
50	Talasahi	-do-	138.53	786	1995
51	Chikanakhandi	-do-	139.34	363	1995
52	Sanagaon	-do-	217.16	991	1995

53	Jillinda	-do-	327.00	1159	1995
54	Mahigarh	-do-	100.36	692	1995
55	Mandania	-do-	245.24	560	1995
56	Ambakhola (Hamlet )	-do-	-	-	1995
	<b>Total of Cuttack Dist.</b>		<b>5,830.36</b>	<b>13063</b>	

**MAHANADI WILDLIFE DIVISION, NAYAGARH ,BOUDH DISTRICT.**

57	Ghungurpada	Boudh	141.24	111	1989
58	Hatigarh	-do-	91.68	250	1989
59	Nuapada	-do-	95.54	132	1989
60	Kumari	-do-	755.39	1203	1989
61	Bhapur	-do-	399.65	389	1989
62	Budhamba	-do-	77.88	144	1988
63	Semiguda	-do-	59.03	14	1988
64	Siripaju	-do-	189.55	78	1988
65	Geredisahi	-do-	166.33	279	1989
66	Nandagadu	-do-	152.57	75	1989
67	Satakhanda	-do-	384.82	451	1990
68	Hinjal	-do-	109.74	206	1989
69	Kutibari	-do-	140.84	246	1989
70	Marada	-do-	29.94	57	1989
71	Atalasar	-do-	420.44	281	1990
72	Sitalapani	-do-	294.56	295	1989
73	Sunakhania	-do-	-	-	1988
74	Ghatgaon	-do-	-	-	1988
	<b>Total of Boudh District</b>		<b>5,530.15</b>	<b>3,916</b>	

NAYAGARH DISTRICT

75	Kuturi	Nayagarh	117.36	107	1985
76	Malisahi	-do-	80.55	180	1985
77	Badamul	-do-	323.86	207	1985
78	Bethiasahi	-do-	66.48	247	1985
79	Muduligadia	-do-		97	1985
80	Kandhajilinda	-do-	345.04	57	1985
81	Chhamundia	-do-	412.42	1069	1985
82	Haripur	-do-	156.82	414	1985
83	Kanipokhari	-do-	196.44	105	1985
84	Khalisahi	-do-		161	1985
85	Bantapada	-do-	216.32	391	1985
86	Iswarpur	-do-	202.85	526	1985
87	Maskajholi	-do-	46.39	96	1985
88	Raigadia	-do-	34.08	216	1985
89	Mohanpada	-do-		232	1985
90	Dasipur	-do-		48	1985
91	Rajingi	-do-	69.79	534	1985
92	Dhobabarei	-do-	50.30	170	1985
93	Kumbhirakhani	-do-	117.04	565	1985
94	Salapaganda	-do-	9.31	35	1985
95	Musuguda	-do-	4.45	22	1985
96	Malasapadar	-do-	27.52	24	1985
97	Sagadabhanga	-do-	20.64	25	1985
98	Bahali	-do-	23.47	-	1985
	<b>Total of Nayagarh Dist.</b>		<b>7,741.59</b>	<b>5,528</b>	

**Areas coming within Buffer zone**

Satkosia Wildlife Division:- Hinjadoli, Nuapada, Olaberi, Kantabeda,  
Tainsi, Hinjagola, Baragot, Badathaila, Bhagatpur, Dandasinga,

Lakshmanpur, Bhalumunda, Ganjada, Kadalibereni, Kothabhuin  
Sankrida, Dalki, Dalasinga, Thukuli, Kumuri, Baghmunda,  
Tentulipada, Nuakheta, Balanga, Talisira, Labangi, Pampasar,  
Hinsirida, Burti, Jagannathpur, Kulsar, Krushnachakra,  
Hidsing, Sinsaloi, Sorisapal, Karunakarpur, Hinjili,  
Dadar, Dhauragoth, Kuthbhuin, Jankartaila, Laimunda

Year of settlement of all above villages is 1962

Athagarh Division:- Barabhaya, Kusal, Balikiari, Chakamunda, Sisupathar,  
Mardamukha, Kharuani, and Marudiha.

Year of settlement of all above villages is 1995

Nayagarh Division: Dhipasahi, Kendudhipi, Purunapani, Gochhabari, Dhuapaju,  
Badasilinga, Sikhargochha, Jamjhula, Sakeni, Tulukutapia,  
Khalighati, Janisahi, Raimada, Khalisahi, Khajuridih,  
Siligardi, Champadali, Sansilinga, Dumuduma, Tailasahi,  
Parhasahi.

Year of settlement of all above villages is 1985.

Village wise areas have been given earlier in Chapter-6

### **8.5. Past Management :**

In the last plan the villages in core zone were covered in a buffer zone. Only 17 Eco Development Committees (EDC) have been formed in the villages namely, Raigoda, Pampasar, Labangi, Jocub, Jagannathpur, Chhotkei, Gopalpur, Salor, Purunakote, Tulka, Karadapada, Goindi, Jillinda, Paikregeda, Kaintara,

Nuagaon and Siaribhundi. These EDCs have been constituted as part of Satkosia Forest Development Agency.

Following plantation activities have been undertaken under NAP through the EDCs.

1. Aided Natural Regeneration	..	230 ha
2. Artificial Regeneration	..	25 ha
3. Pasture Development	..	25 ha
4. Bamboo Plantation	..	50 ha
5. Mixed Plantation	..	<u>53 ha</u>
		383 ha

Activities like Construction of Community Halls, Village Tanks, Cross-dams, Dug wells, Village Roads etc have been taken up in these EDCs.

## **8.6. Prescription / Activities :**

### **8.6. 1. Mitigation of Human-Wild animal conflict:**

Human- wild animal conflict is a serious problem in the sanctuary, for which the relationship between people and park manager is becoming worse. Production of crops decreases due to depredation of crop by elephant and wild pigs. Though reports on human death and injury caused by wild animals are not common, some cattle are killed by wild animals. Following prescriptions are being given to reduce the conflict.

Dug wells, Village Roads etc have been taken up in these EDCs.

### **8.6.1.1. Power fencing.**

It is the only successful means to mitigate the conflict. A cluster of villages will be enclosed by solar operated power fencing to keep away wild animals from depredation.

	<b>Cluster of village</b>	<b>Boundary length (Appx. in Kms)</b>
1.	Hatibari-Karadapada-Ramimunda - Majhipada	21.5 Km
2.	Katrang village	8.5 Km
3.	Purunakote- Gopalpur	10.5 Km
4.	Jocub	8.0 Km
5.	Badakheta	4.0 km.
6.	Salor	4.5 km.
7.	Chhotkei	6.5 km.
8.	Pampasar	6.0 km.
9.	Labangi	6.5 km.
	<b>TOTAL</b>	<b>76.0 km.</b>

The location and length of fence may change depending on severity of depredation at the time of installation with the discretion of the concerned D.F.O.

Maintenance of power fencing is to be done by the people benefited. They have to be motivated to generate a fund for its maintenance from among themselves. One in each village will be trained to do minimum repairing at the time of need. The villagers are to be educated how to handle the system. The EDC formed in these villages will furnish an undertaking to that effect before installation of the fencing.

**8.6.1.2. Alternate Cropping.**

The victimized villagers are to be asked to switch over to alternate crops from traditional paddy, ragi, sugar cane.

List of crops not preferred by elephant or wild pig	
Oil seed crops	Sun flower, linseed, mustard, sesemum
Pulses	Green gram, Black gram, Cowpea,
Horticultural	Papaya, Chilly, Lemon, Litchi, Zinger, Termeric, Onion, Brinjal

Subsidy for cultivation of the above crops will be given to the interested farmers. Technical knowledge will be given to them through a series of training camps to be organised in association with Agriculture / Horticulture experts.

### **8.6.1.3. Payment of compassionate amount.**

The victim or his family should not feel that he is being harassed in getting his compassionate amount. The sanction of compassionate amount is to be made as quick as possible. It is better if payment is also made quickly.

It is proposed to constitute a Depredation fund of Rs 50,000/- with the DFOs so that some part of compassionate amount can be paid immediately to the victim as advance where it is believed that depredation has occurred. Rs. 30 lakh will be required during the plan period @ Rs. 3 lakh per year to make compassionate payment towards crop depredation, cattle kill, human kill and injury.

### **8.6.1.4. Awareness.**

Awareness camps are to be organised during cropping period on how to drive away an elephant, how one should be careful during that time and what are the precautionary measures one should adopt during that time. Crackers, *mashals* with kerosene are to be supplied to them.

### **8.6.2. Health Camps.**

The villagers living inside the sanctuary are suffering from common Malaria, Cerebral malaria, Gastro-enteritis and common Skin diseases. During a recent health camp at Beherasahi under Tikarpara range, incidence of Tuberculosis was noticed with two villagers. Their health care is to be taken as a Trust Building Activity (TBA) as they are deprived of minimum medical facilities in dense forest



areas of this sanctuary. All the villagers living inside the sanctuary will be identified and issued with a **Health Card** .This card will indicate their diseases and treatments.

Similarly the health of domestic livestock is more important as they spread diseases to wild animals in the sanctuary.

It is proposed to conduct 2 human health camps, 2 livestock health camps in a cluster of 5 villages annually. Care is to be taken to cover each and every village. There will be 30 such clusters where the above camps are to be held.

No. of Human health camp / year ..  $30 \times 2 = 60$

No. of live stock health camp/ year ..  $30 \times 2 = 60$

There will be free supply of medicines and medicated mosquito nets in the camps. The services of Doctors and Para Medical staff are to be taken from the District / Sub-division Hospitals or may be outsourced. Rs.5000/- per camp is proposed to be spent on an average per human being. Record is to be maintained regarding the treatment of human beings.

### **8.6.3. Immunisation.**

Unless the domestic cattle are immunized, the animal diseases if any will spread to the wild animals. It is important to see that all the village cattle in the sanctuary are vaccinated properly against the infectious diseases like Rinderpest, FMD, BQ & HS. The immunization will be taken up with the help of Veterinary Department at proper time.

All such immunized cattle will be marked by a white ring mark on their horn. Anti helminthes tablets are to be given to the cattle regularly after proper stool examination. Rs.10,000/- per cattle camp is proposed to be spent and there will be minimum one camp per village per year. Record is to be maintained regarding the treatment of the livestock.

#### **8.6.4. Raising Farm Forestry.**

To reduce the dependency of villagers on sanctuary, farm forestry is the only way to meet their day today requirements of fuel wood, fodder, bamboo and house building materials and therefore these species will be planted to meet the above requirements.

#### **Location:**

Farm forestry will be taken up inside the revenue area, on private lands, farm bunds of villages located in and around the sanctuary. In each village 5 – 10 ha of such land will be identified. There are 102 villages inside the sanctuary and 73 villages in buffer zone. Plantation will be raised in 175 villages phase wise. Every year 75 ha of area in 15 - 20 villages will be taken up for farm forestry and will be maintained for subsequent 3 years, thereafter it will be handed over to the villagers by forming EDC / VSS.

**8.6.5. Pasture Land Development.** There is a lot of fallow lands in the above villages full of Eupatorium and Ageratum weeds. If such lands can be developed in to pasture land, it will not meet the fodder requirement of domestic cattle but also that of wild herbivores.

The selected fallow lands will be ploughed twice by tractor to uproot the weeds. Then the land will be broadcasted with seeds of Stylo, MP Cherry, Cowpea, Horse gram in one portion and transplanted with slips of hybrid fodder grass like Para grass and Andropogon grass procuring from Veterinary fodder Farm at Angul. The plantation will be carried in July and August. Fertilizer and manure will be applied during planting. Then the area will be enclosed for one year by brush wood fence. The plantation will be maintained for subsequent 2 years, where weeding, soil working and urea top dressing will be undertaken.

One hectare of fallow land in each of 175 villages will be identified for this Pasture Land Development activity. Every year 15 -20 ha of land will be developed.

**Cost Norm.**

Rupees

1 <sup>st</sup> year	Weed eradication	3,000
	Grass planting	8,000
	Brush wood fencing	1,000
		<b>12,000</b>
2 <sup>nd</sup> year	Weed eradication	1,000
	Soil working, fertilizer applying	1,000
		<b>2,000</b>
3 <sup>rd</sup> year	Weed eradication	1,000
	Soil working, fertilizer applying	1,000
		<b>2,000</b>

#### **8.6.6. Green Fencing:-**

Fencing of crop fields along the PWD road by plants replacing the bamboo fence. The seeds of plants like custard apple, bamboo, Jatropha, Vitex etc. will be sown in rows after ploughing in 6 road side EDCs over 12 running kilometers.

#### **8.6.7. Construction of Water Harvesting Structures with Irrigation Channels.**

To increase the irrigation potential in the above villages at least 100 WHS or large water bodies will be created with irrigation channels to the crop fields. Surplus spill way will also be there to let out the excess rain water. Estimate for each such WHS / Water body will be 2 – 3 lakhs. Every year 10 such structures

#### **8.6.8. Sinking Dug Wells.**

At low lying areas in the crop fields dug wells will be sunken to facilitate lift irrigation by traditional methods (Tenda) or by Peddle pumps. Irrigation channels will also be constructed with brick masonry. 30 such dug wells with channels will be constructed @ 3 in every year. Estimate for each dug well will be around Rs.30,000/-.

#### **8.6.9. Renovation of existing tank and dug well.**

About 30 nonfunctional village tanks, 20 dug wells and 30 tube wells in the above villages will be renovated to make them useful. That will help in providing drinking water to the villagers and domestic animals besides acting as source of irrigation.

Estimate for renovation of each tank	..	Rs.75,000/-
Renovation of each Dug well	..	Rs.20,000/-
Renovation of each Tube well	..	Rs.20,000/-

### **8.6.1. Supply of Agricultural inputs and subsidy.**

1. The villagers will be motivated to go for cash crops, pulses, oil seeds, vegetables, fruits as alternate crops which will not be damaged by elephants or wild pigs instead of cultivating paddy as a traditional practice. In the areas close to water sources, the villagers may go for double cropping, but in uplands they should go for alternate crops.
2. The inputs like hybrid seeds and grafts of above crops will be supplied to the farmers on subsidised rate. The subsidy will be provided by the park authority.
3. Inputs like sprayer, diesel pumps, threshers, iron plough, agricultural implements will be supplied with nominal cost.
4. Fertilizers and pesticides will be provided free of cost to them, who go for alternate crops.
5. Use of vermin compost for organic farmers is essential. Vermi compost units in the village will be made training to farmers will be given.
6. The proper required training is organized for imparting correct techniques in farming.

### **8.6.11. Pisciculture and other livelihood activities.**

When there will be lot of water bodies in villages in and around the sanctuary, Pisciculture potential will increase which will be a good source of community income. The cost of tank preparation, fertilizer application, fish fingerlings will be borne by the sanctuary authority. Two tanks are to be taken up every year.

Similarly Apiculture, mushroom cultivation vegetable cultivation will be encouraged in the villages under Ecodevelopment.

#### **8.6.12. Eco-Tourism.**

The villages coming within the eco-tourism zone will earn their livelihood from eco-tourism. They have to organise themselves by forming registered societies to provide services to the eco-tourists. They will collect fees from them. Detail possibilities are described in **Chapter-7**.

#### **8.6.13. Promotion of Traditional knowledge on Herbal Medicines & Pharmacy.**

A workshop on local Vaidyas was organised on 28.03.2006 at Tikarapara by the Conservator of Forests, Development Circle, Cuttack. It was noticed about 75 Vaidyas in and around the sanctuary have participated and shown their talent in curing diseases like blood pressure, arthritis, dysentery, delivery problems, poisoning of snake bite, diabetes etc. It is required to document their knowledge and skill to promote them.

Therefore it is suggested

1. To prepare a list of Vaidyas with their address.
2. To organise them by forming a registered society.
3. To conduct regular workshops among themselves and document their practices.

4. Documentation will include identification of medicinal plants and parts in use, quantity and proportion used for preparing medicines and the diseases cured by them.
5. They will be provided with small tools and equipments required for preparing, packing and storing the medicines.
6. They will be allowed to collect medicinal plant parts from the sanctuary to raise commercial plantation in their private land outside the sanctuary.

#### **8.6.14. Supplying raw materials to traditional artisans for handicraft making.**

There are bamboo artisans in villages like Takarasingha, Badakheta, Purunakote, Tulka who produce bamboo mats, baskets and many other useful articles to sell them in local 'Haats'. Their income can be increased if they produce more and sell them in towns or to industries for preparing hot pressed boards. Transportation and marketing are to be facilitated. Bamboo can be supplied from territorial divisions on nominal prices to the villagers outside the sanctuary. The high stumps, broken bamboo obtained from clumps during SSO work will be supplied to the bamboo artisans of the sanctuary free of cost.

#### **8.6.15. Improvement marketing linkage.**

The economic status of the villagers will improve only when their produces are sold in markets of near by town or city. The agricultural produce, vegetables produced from their fields will be taken to Angul or Nayagarh market for sale.

The transporters and whole sellers will be contacted to open their inlets. Green shopping with a vehicle will be introduced, who will collect produce from them for marketing and supply them desired commodities like rice etc. as barter.

The fish produced from village ponds will be kept in ice containers, and transported to nearest towns like Angul, Nayagarh or Narsinghpur. The fish whole sellers will be asked to contact the fish farmers at the time of harvesting. They will come with ice and ice box to carry fish to the sale point.

To dispose the bamboo mats, veneer industries of Cuttack, Bhubaneswar, Kolkata will be contacted to lift bamboo mats for preparation of hot pressed hard boards for use as table tops, partition walls etc. ORMAS may be contacted to market the bamboo articles and other handicrafts produced by the villagers.

#### **8.6.16. Creation of employment opportunities.**

All the departmental works will be executed by engaging the local labourers. Plantations, SSO works, soil and moisture conservation measures, road repairs, digging water bodies, dragging timber are the labour oriented works.

Local people can be engaged as daily waged labourers in fire watching, fire fighting squads, anti-smuggling squads, anti poaching squads, elephant trackers etc.

Other departmental works under the scheme viz. NREGS, NFFW, EGS, SGRY, Special SGRY, IWDP etc under Panchayati Raj and Rural Development Departments can be dragged to be implemented inside sanctuary, as Income Generation Activity (IGA).



#### **8.6.17. Asset creation.**

Certain trust building activities (TBA) will be undertaken in the name of E.P.A. To generate support of local people and their goodwill minor developmental, asset creating works will be undertaken in villages on their interest. Such activities may include addition of rooms in school, construction of community hall, ponds, sinking of tube wells, supply of generator sets, Solar home lighting or street lighting system, village road and some other infrastructural developments as desired by the villagers.

#### **8.6.18. Building effective local institutions.**

Forest Development Agency of Satkosia Wildlife Division and Mahanadi Wildlife Division are registered societies which already exist for Satkosia Gorge Sanctuary. There are 17 Eco- Development Committees (EDCs) in FDA, Satkosia Wildlife Division and . So EDCs in rest villages will be formed. Vana Samrakshyan Samiti (VSS) as per Government of Orissa, Joint Forest Management Resolution will be formed in villages outside the sanctuary over the K.Fs and revenue forests & other Eco-Development activities will also be undertaken there.

Besides that, some independent registered societies will be formed like **TIPPS** and **PARIVESH** to render services to eco- tourists and take steps for protection and development of Satkosia Gorge Sanctuary. They will actively participate in awareness, training and extension activities.

SHGs (Self Help Groups) will be formed in the villages to encash traditional knowledge and practices to improve their economic status.

User groups will be formed like “Pani Panchayat” to generate funds for maintaining the assets created in eco-development so that they will function sustainably.

VFWs and FEOs of the sanctuary will be engaged to build such effective local institutions in and around the sanctuary.

#### **8.6.19. Awareness Creation.**

Awareness creation is a continuous activity to be taken up from very 1<sup>st</sup> day of the programme. Awareness among the people can be increased by way of conducting Pada yatra, cycle rally, cultural programmes, street plays, meetings, audio-visual aids, observing national days. NGOs and local educational and voluntary institutions will be involved in the programme. People of all sectors may be involved.

Publicity may be made through news letters, leaflets, brochures etc.

Every year there will be at least one such awareness campaign in each village. This programme will continue in first 3 years of the plan period. It may extend beyond 3 years if felt necessary.

#### **8.6.20. Capacity building.**

Eco-Development is a new arena for the staff of forest department. An attitudinal change is required to work with people. Trust building, transparency and commitment are the important attributes. So training and orientation to staff is

more required. There should be at least 3 such trainings in a year to be given to the staff.

Training to the people is also required to build their capacity. Training on different skills of work will help them earning more from existing practices. Resource persons of different disciplines will be asked to act as trainers in the trainings to be conducted bi-monthly at suitable places.

### **8.7. Village level site specific strategies.**

Eco-development activity may not commence simultaneously in all the villages. Priority will be given to the villages which are located in the interior pockets of the sanctuary. In 2<sup>nd</sup> phase the activity will concentrate in the villages located inside the sanctuary on either side of PWD road or main forest roads. 3<sup>rd</sup> priority will be given to the villages situated outside the sanctuary.

Development of sanctuary depends on active participation of all its stakeholders like local community, forest staff, politicians, industrialists, hotel managers, tour managers, business men, NGOs, other line departments like DRDA, Education, Tribal Welfare, Rural Development, Health, Veterinary, Fishery etc.

All the Stakeholders will be asked to participate in planning, implementation, monitoring and evaluation of the activities of the management plan. Participatory Rural Appraisal (PRA) is a technique to identify the resources of the village, strength and weaknesses and need of the people. So before planning, PRA will be undertaken in every village in presence of all the

stakeholders. Micro plans will be prepared in such a manner that the villages will accept its prescriptions. All the Eco-development activities may not be applicable for all the villages. So the village level site specific strategies will be prepared by the field staff only after conducting PRA. The physical and financial targets and year wise schedule of work will be written in the village wise micro plans.

### **8.8. Monitoring and Evaluation.**

Quantitative and qualitative monitoring and evaluation indices are required to measure progress towards the objectives, guide project management and assess progress towards sustainability, once external force is withdrawn.

All the activities executed in the field need proper monitoring to help evaluate their measures of success. Parameters need to be identified and the analytical approaches must be laid down.

The M&E will not serve its purpose unless each activity and programme is backed by follow up actions till such time as people are ready to take over the maintenance and continuity of the programme on the basis of faith, conviction, and acquisition of skills and spirit of cooperation. The M&E must be an objective which should identify the parameters where status needs to be tracked in context of the project outputs. The evaluation should determine the measure of success, problems, and failures and suggest means of improving the programme in specific terms. People in the village should be able to appreciate the need for M&E, the process involved and the need for their constructive participation in the M&E activities.

M&E should be done for every village. Every time the results need to be compared with that of previous report or initial condition.

All data need to be maintained in a computer. A database need is to be created for each village to feed the periodic progress and to monitor the improvement of the project.

### **Monitoring.**

Monitoring will be both daily and periodical.

#### **Daily monitoring.**

It includes

- Day to day activities.
- Deployment of executive staff and superiors.
- Timely distribution of commodities.
- Purchase of materials from authorised dealers.
- Proper utilisation of funds and articles.
- Movement of staff to the sites.

#### **Periodic monitoring.**

It includes

- Participation of people in planning and execution.
- Achieving the annual physical and Financial targets.
- Quality of work

Evaluation can be done annually by internal team and periodically after 3 years and 5 years by external agencies.

The internal team includes Assistant Conservator of Forests, Deputy Conservator of Forests and Conservator of Forests.

The external agencies may be any reputed NGO, University, Research organisation, Extension wings of Agriculture and Soil Conservation.

Certain parameters or indicators of success are to be followed and compared with previous reports.

The parameters maybe either Direct or Indirect.

### **Direct Parameters.**

Eco-development is evaluated as successful if

1. Less number of people are going to the forests
2. More number of hybrid cattle are seen in houses
3. More number of days cattle are fed at shed (stall feeding)
4. More people are doing fishery, poultry, horticulture and tailoring
5. Large number of peoples participate in village meetings
6. More collection of user fees / maintenance cost from the people
7. Less number of forest offence cases booked
8. Less poaching is seen
9. Less fire incidents occur in forests
10. More people use solar cooker, Gobar gas, LPG gas chulla and there is a persistent demand for them.

## **Indirect Parameters.**

Eco-development is evaluated as successful if

1. Increasing number of Pucca houses (RCC) are seen in village.
2. Increasing number of motorized vehicles, TV, radio available are seen in villages.
3. More number of literate persons / youths
4. More use of Iron and plastic furniture
5. Maintenance of community assets is done by themselves
6. Recycling of money seen in SHG pass books.
7. People selling agricultural / horticultural produces in nearest towns
8. Less infant mortality
9. Less malnutrition and disease
10. Less people migrating to outside
11. Availability of water in the dug wells
12. Less illicit stumps in forest

## CHAPTER – 9

### RESEARCH, MONITORING AND TRAINING

#### 9.1. Research.

Research in Satkosia is in initial stage. During 1980s research on Gharial was carried out by one Dr. L.A.K.Singh, Senior Research Officer, who is now at State Wildlife Hrs., Orissa. There are 9 Silvicultural plots within the sanctuary where the Silviculturist, Bhubaneswar is conducting study on growth parameters in different types of forests. This study is not that much relevant so far as wildlife conservation is concerned. Recently one NGO, “Foundation for Ecological Security” is conducting a study on biomass aspect of the sanctuary. At present the same NGO has been allowed to continue their further studies on “Conservation and Peoples livelihood rights in India: in Satkosia Gorge.” There is absolutely no research on wild animals or management aspects going on.

#### 9.1.1. Therefore it is suggested to conduct research on the following subjects:

6. Determination of range of different elephant families of Satkosia Gorge Sanctuary and identification of their corridors..
7. Causes of decline of wild dog, Nilgai, Hornbill, vulture and Gharial population in Satkosia Gorge Sanctuary.
8. Identification of endoparasites of major wild animals for pathological study. Biodiversity study in general and medicinal plants in particular available in Satkosia Gorge Sanctuary.



9. Study on Giant squirrel.
10. Existence of dwarf variety of elephant (Gunthuni Hati), if any in Satkosia Gorge Sanctuary.
11. Identification of butterfly, birds, Harpeto fauna.
12. Habitat of king cobra.

**9.1.2. Broad Strategies:-**

Linkages with organizations possessing research capabilities and subject experts shall be established. Collaborative summer internship studies shall be carried out involving the Senior Research Officers of Wildlife organization.

Continuous assessment of population, distribution pattern, habitat mapping of 15 to 20 flagship species including ecological impact assessment studies shall be done as a regular in house monitoring mechanism.

Study documentation, inventorisation of all groups of plants/animals shall be done in the plan period including soil and aquatic flora/fauna. For this purpose a sum of about Rs. 10-15 lakhs has been kept in the budget for each taxonomic group (annelids/arthropods/mollusks/fishes/ amphibians/reptiles/birds/mammals /soil fauna/ aquatic fauna etc.) which shall be collaborative in nature 3 years. Specific budget for Socio-economic as well as ecological monitoring including impact assessment studies has also been made.

The PA shall have museum/herbarium of locally available specimens. All research activities shall be under the supervision and guidance of Senior Research Officers of State Wildlife Organization headquarters. Similarly research activities taken up by outside organizations shall be collaborative in nature involving Senior Research Officers of State Wildlife Organization headquarters.

### **9.1.3. Agency for conducting research.**

External agencies as follows will be assigned to conduct research on the above subjects involving Senior Research Officers of the State Wildlife Organization headquarters in collaboration with Satkosia Gorge Sanctuary authority. It is also proposed to appoint full time researchers in the sanctuary with provision of supporting logistics.

11. Wildlife Institute of India.
12. Forest Research Institute.
13. Bombay Natural History Society.
14. World Wildlife Fund.
15. Zoological Survey of India.
16. Botanical Survey of India.
17. Universities and colleges of Orissa..
- 18. National Level NGOs.**

### **9.1.4. Funding Agency.**

The respective interested organisations will arrange their funds for conducting research. The Satkosia Gorge Sanctuary authority will provide all logistic support and necessary assistance for conducting research. The researchers may seek assistance of different funding organisations like UGC, USDFWL, WWF, IUCN, UNDP, and GTF etc.

### **9.1.5. Infrastructure.**

#### **14. Establishing observatories.**

One observatory at Badamul and other at Tikarapara will be established to record rainfall, temperature, humidity, wind velocity etc. Necessary instruments like rain gauge, mini-max thermometers, anemometers, Stevenson's screen etc. will be purchased and installed in open areas with proper fencing. One Research Assistant at each station will be posted for recording data and maintenance of instruments.

#### **15. Establishment of a Museum/Herbarium:-**

One museum will be established at Tikarpada where specimens of all invertebrates, insects, small reptiles exclusively available in the sanctuary will be kept under label for identification. Similarly, the museum will have a herbarium which will contain the different endangered plant parts locally available for identification and to provide information about their usefulness to the mankind.

#### **16. Library.**

At Angul, a good library is required to keep books, journals, papers, research papers, reprints on wildlife study and research. A building will be constructed. Steel racks, almirahs will be purchased to keep all above articles.

A computer system with Internet facilities will be kept in the library for updating knowledge.

### **17. Preservation plot.**

Since the entire sanctuary is under tremendous biotic pressure, a piece of representative plot of about 20 ha will be preserved for biodiversity study. The area will be fenced with barbed wire with iron angles. Fire lines will be traced around the plot to protect the conservation plot from fire. The exact location of the conservation plot in compartments will be described and depicted on the map.

#### **9.1.6. Study:**

Study and inventorisation of all groups of plants and animals of all taxonomic group like Annelids, Arthropods, mollusks, fishes, amphibians, reptiles, birds, mammals ,soil fauna & aquatic fauna etc.shall be conducted by the concerned colleges, Universities and institutions. The out come of the study will be documented and published in the reported journals and released on website. Above study will be completed within 1<sup>st</sup>. 3 years of the plan period. Rs.10-15 lakhs / taxa will be spent.

### **9.1.7. Documentation:**

All the research papers, results will be kept in the library. Field information, inventory, enumeration, survey reports, resources will be documented properly and systematically. A GIS data base will be developed. This data base will be helpful for managing the park effectively.

### **9.1.8. Summer Internship study:**

During summer vacation of the colleges, the interested students will be allowed to camp in the nature to know about the details of elements of the sanctuary. The senior Research Officer of the State Wildlife Organization will be involved to participate such summer internship studies to educate them.

### **9.1.9. Website for Satkosia Gorge Sanctuary.**

A website will be opened for Satkosia Gorge Sanctuary furnishing all sort of information about the sanctuary including photographs. The management plan, research articles on Satkosia Gorge Sanctuary, various ongoing and proposed activities will also find place in the website. An I.T. trained person will be engaged as part time worker to document all data in the website.

## **9.2. Website Monitoring.**

Techniques and methodologies used in monitoring different events will be utilized efficiently. This will involve different stages from actual field work to record keeping. The value of the current monitoring activities for management will be assessed and documented. The activities to be monitored are given below.

### **9.2.1 Monitoring of capacity building of staff.**

- Technical skill and field ability of the staff.
- Field skill includes ability to walk long distance, observe carefully, recognize and record animals and plants.
- Regular recruitment of young and energetic staff.
- Training (Pre-service and in-service) to staff in regular manner.
- Analytical skill of the staff for design, survey, analysis of data.
- Involvement of wildlife biologists, naturalists, researchers from Universities, NGOs etc in Park Management.
- Requirement of post, present position, vacancy and deployment of staff.

### **9.2.2. Website. Monitoring of material resources.**

- Availability of basic tools like rudimentary maps, chain, tape.
- Availability of special tools like compass, camera, range finder, GPS, spotting scope.
- Availability of advanced tools like camera trap, computers.
- Maintenance of above equipments.
- Capacity of staff to handle all these equipments.

### **9.2.3. Monitoring on documentation and data upkeeping.**

- Every information collected from the field will be documented chapter wise.
- Basic data on soil, geology, rain fall, temperature, humidity, wind speed, drought, vegetation type, habitat type, change on forest composition,

- species composition/ diversity, their abundance, fire incidents, grazing pressure, research activities will be documented in computer.
- Maps on above parameters will be prepared separately and stored in GIS software for analysis or made over transparencies for Manual GIS.
  - The limitations and threat to park animals to be identified and listed
  - The zone of influence, smuggling routes, strategic points, poaching and accident prone areas to be listed and shown on the map.
  - Year wise survey reports, animals estimation data, vegetation survey data will be documented.
  - Grass land to be developed, villages relocated, waterholes created, watch towers constructed, areas earmarked for grazing will be recorded.
  - Data base prepared in the computer will help the managers to think, plan, implement, monitor and finally evaluate the improvement of habitat and health condition of animal population.
  - Updating of data every year.
  - Data updating in Ethnobotany, traditional practice.

#### **9.2.4. Monitoring of animal population and their health.**

- Line transect method is statistically more sound than block count or waterhole count. So permanent line transects of 2 - 4 km each will be laid all over the sanctuary. The laying of transect will be statistically designed. Strata can be divided basing on forest types.

- Time of census will be in January every year as all the animals are equally distributed all over the sanctuary due to availability of water every where.
- Pugmark census will be carried out for large cat population estimate on roads and paths available in animal abundance area every year.
- Camera trap method will be followed to study the survival, mortality, recruitment and dispersal rate. Capture- recapture model to be followed once in 3-4 years during January.
- To study the biology and behaviour, home range social organisation / interactions, Radio-telemetry study will be carried out with the help of scientists in Wildlife Institution of India.
- To check the periodic growth in population vehicle transect census will be done twice in a year, once in summer and another after rainy season.
- The health condition of the ungulates will be monitored from waterhole observation. Their population structure and sex ratio will be assessed from water hole count. Water towers near every water hole will be constructed for monitoring. There are only 4 watch towers in this sanctuary. 5 more watch towers at 150 mtr from water holes will be constructed.
- Relative abundance of animals in a particular habitat can be estimated from dung / pallet/ scat count.
- Bird population will be estimated by adopting point sample method or capture – recapture method.



- Maintenance of direct sighting registers. The animals sighted by staff or tourists will be recorded compartment-wise in a spacio-temporal table, where RFs , compartment. No. will be written on column heads. Data will be written on row heads. In each cell the sighted animals will be mentioned with code.
- Regular collection of fresh faecal sample and testing in pathological lab to know the helminthes.
- Disinfection of water holes.
- Regular vaccination to domestic cattle in and around the sanctuary against FMD, Rinderpest, Tuberculosis, Protozoan diseases.
- Tranquilization will be adopted if any animal is found sick for its treatment.
- Involvement NGO and locals in census.
- Continuous assessment of population , distribution pattern and habitat mapping of `15-20 flagship species like elephant, tiger, leopard, giant squirrel, chousinga, gharial mugger, barking deer etc. will be conducted every year.

#### **9.2.5. Vegetation Monitoring.**

- Growth and abundance of trees, shrubs, grasses, palatable for herbivores which provide cover, shelter will also be monitored.

- Floristic inventory will be made in every 5 years, which will speak about elimination or introduction of any species.
- Vegetative map and habitat map will be prepared once in every 5 years.
- Estimation of ground cover percentage to be made every year after rainy season. Counting of grass, herb, rock and soil cover area in 50 cm x 50 cm iron frame following point sample technique.

More percentage of palatable grass and herb on ground cover indicates better habitat condition for ungulates.

- Estimation of shrub density is to be made every year after rainy season in a circular plot laid at 5 mt radius around sample points uniformly distributed over the sanctuary on fixed transects.
- Tree cover and its regeneration rate will be in every alternate year by following circular plot sampling at 15 mt radius around sampling points laid at 400 mt interval on transect line.
- PCQ method will be followed in same time to compare the abundance of particular tree species.
- Tree canopy cover will be estimated by using Densitometer and cross wire sighting to estimate the openness or closeness of the canopy. It is to be made in every 3 year.
- Photographic record provides all time series of habitat factors undergoing change. At every 3 years interval the habitat (where intensive treatment is given) be photographed from a particular vantage point.

### **9.2.6. Monitoring habitat quality.**

- Grass land development in the Relocation zone.
- Fruit bearing tree / shrub plantation in open forest areas, their growth.
- Invasion of Eupatorium and other weeds in new areas suppressing grass.
- Availability of water for animals during pinch period in the natural and artificial water holes.
- Quality of water in the water holes.
- Availability of wallowing area for Sambar.
- Checking of salt licks.
- Desilting of water holes before rain.
- Ecological impact assessment studies shall be done every year.

### **9.2.7. Monitoring Tiger movement.**

- Day today monitoring will be done for each tiger, observing pug marks on tracks.
- Since tiger is territorial, the movement & location of every tiger will be recorded in individual files.
- Pug mark, scat, scratch, claw mark on trees (Mahua or Jamun or Bombax or Schleicheria) with place of observation will be recorded with date in the file.

- Record of direct sighting, listening call, kill evidence, cattle lift evidence will be made.
- The territory of each individual tiger will be marked on the map.
- Camera trap will be used at mostly used area to take photograph of the tiger which will be taken periodically and kept in the individual file.
- Pug mark tracings will be kept in the file with all detail information.
- Plaster caste of pug mark with Id. No. of tiger will be stored.

#### **9.2.8. Monitoring Protection.**

- Functioning of anti-poaching squads, elephant trackers, movement of staff, their stay there and doing duty as per schedule.
- No. of illicit felling, NTFP collection, encroachment cases booked in every month.
- Functioning of VHF and utilisation in communication. At every VHF station, a VHF register will be maintained date wise. The details of message either received or sent from / to a particular station will be recorded putting time. If instructions are given over VHF, the station in charge will ensure compliance of the instructions, and keep it in writing on the VHF registers. This will be presented before the Senior Officers during their visit.
- Maintenance of roads.
- Movement of vehicles and their maintenance.

- Provision of food, water, ration to the staff staying in remote areas in anti-poaching / anti-smuggling camps.
- Condition of arms and ammunitions and supply of them to needy places.
- Tracking and resolving offence cases.
- Intelligence gathering, watching movement of habitual offenders, taking informants in to confidence, giving some tips / financial assistance from secret funds.
- Formation of mobile party consisting Forest Guards and hired Home Guards, APR force.
- Directing the mobile party over V.H.F. to attend duties at any place.
- Rapport building with Judiciary, District Administration and Police.
- Arms training, self defence training to the staff.
- Deployment of young & energetic staff in patrolling work.
- Update the list of arms license holders
- Well equipped Mobile party.
- Fixing time of movement of vehicle, fixing them speed limit while moving inside the PWD road inside the park and regulate them.
- All entry gates to be manned properly.
- Identification of commercially exploited plant / animal parts which are smuggled frequently.
- Special attention / protection to core area, special and unique habitats, riverine area and animal congregation area.

- Ensure foot patrolling by local staff in forest.
- Ensure higher officers camps at times in remote areas to realise the problems& working conditions.
- Registers to be maintained at antipoaching camps for recording day to day movement of staff and their observations.
- Providing awards, prizes, incentives to staff doing better job in protection.

#### **9.2.9. Monitoring Fire control.**

- Like monitoring protection.
- Fire to be handled at early stage.
- Villagers passing through sanctuary during fire season are to be made aware not to carry match box, smoke bidi or take fire with them.
- Collection of match box and bidi from them during period.
- Fire line tracing during December or latest by February 15.
- Amenities for fire fighting squads.
- Providing rewards, prizes, incentives to staff and villagers for their better performances.

#### **9.2.10. Monitoring grazing Control.**

- Issue of grazing permits to the villagers living inside the sanctuary, mentioning the permissible cattle number.
- Restriction of cattle in the marked grazing areas.

### **9.2.11. Monitoring tourism.**

It is dealt in detail in Chapter 7.

### **9.2.12. Monitoring Eco-Development works.**

It is dealt in detail in Chapter 8.

### **9.2.13. Monitoring Research and training.**

- Documentation of monthly progress.
- Interaction with researchers and trainers regularly.
- Attending such programmes.

### **9.2.14. Monitoring Awareness Programme.**

- Fixing number of awareness programme in a month.
- Publication of leaflets, hand bills and circulars.
- Movement of vehicles for the programme.
- Organising film show, slide shows every month in every village.

### **9.2.15. Midterm Evaluation**

After 4<sup>th</sup> and 8<sup>th</sup> year, mid term evaluation will be made on the efficacy of the prescriptions of the management plan. If it is thought that some of the prescriptions are not suitable for changed environment / situation those may be modified by the Divisional Forest Officer with intimation to higher authority.

### **9.3. Training.**

#### **9.3.1.On the Job training.**

Quarterly training on following subjects:

- Conduct enquiry and writing reports.
- Intelligence gathering techniques.
- Documentation method.
- Handling the offenders
- Legal provisions.
- Witnessing the evidence in court.
- Recording and processing defence cases.
- Collection of evidences.
- Patrolling drill, house search, raid drill.
- Awareness building, eco-development activity.
- Visitor handling, integrated tourism management.

#### **Annually.**

- Use and maintenance of fire arms and connected responsibilities.
- Fire fighting.
- Sting operation.
- Forensic
- First aid, handling emergency cases.
- Field craft and skill.
- How to sensitize other departmental officers.



- Organising probe meetings, awareness camps.
- Wild animal census techniques, GIS.
- Vegetation survey technique.
- Use of special equipments like GPS, Camera trap, Range finder.
- Operation of electronic article, VHF, TV, computer
- Soil and moisture conservation measures.

### **9.3. 2. Formal training Course.**

Wildlife Trained staff / officers are very few. Only Asst. Conservator of Forests of this Division is trained in wildlife management, rest field staff have not been trained.

- The untrained Dy.C.F. and ACFs will be sent for PG Diploma Training in Wildlife Management at Wildlife Institute of India, Dehradun which is of 9 months duration. The Range Forest Officers will be sent for certificate courses in Wildlife Management in W.I.I., Dehradun one in every year.
- Short course trainings in Forensic Science, Investigation in WL crime, interpretation and visitor management, Eco-development are being organised in W.I.I which can be attended by higher officers.
- Government departments like Agriculture and Soil Conservation are organising training for 2 weeks on Watershed Management, Community organisation, Soil conservation measures. Those opportunities will be

availed. Lower level staff like Foresters and Forest Guards may attend these training.

- Exposure visit to “Rally gaon” in Maharashtra, Periyar in Kerala and other places where Eco development, participatory management, soil conservation, water shed management have been done successfully.

### **9.3. 3. Establishing a Learning Centre.**

Satkosia Gorge Sanctuary has many such locations which can be grouped under special habitats, cliffs, plateau, mesic area, riverine areas which are unique. There are caves and dens where large cats take shelter. The detail descriptions have been given in Chapter-2.

- All such important places will be identified by GPS and listed.
- Located on the habitat map.
- The routes to these places are identified.
- The staff of Satkosia Gorge Sanctuary and of other divisions of Orissa will be taken to these places to educate them what are the unique and special habitat. Seeing is believing.
- Field tours to these places will be organised once in a year.
- Nature trails, interpretation centres, science parks, relief plans can be artificially developed which will be helpful in imparting training to the staff.

## CHAPTER – 10

### ORGANISATION AND ADMINISTRATION

#### 10.1. Structure and Responsibility.

**10.1.1.** The northern part of the sanctuary above to the river Mahanadi including the river is managed by Satkosia Wildlife Division and only the southern portion is managed by Mahanadi Wildlife Division. As middle of the river is the revenue district boundary, half of the river should come within the jurisdiction boundary of both the divisions for better protection and for solving all legal problems in future. A fresh notification describing the divisions' boundary is needed of the hour.

Further the sanctuary boundary needs to be extended to the adjoining forests which are frequently used by the wild animals of the sanctuary. Therefore it is suggested to rationalise the sanctuary in the following manner and a Govt. Notification be effected.

#### 10.1.2 Rationalization of sanctuary boundary

##### CUTTACK DISTRICT.

The boundary line of the sanctuary in the south east starts from the middle of the river Mahanadi near Baliput ferry ghat of Cuttack district which runs towards north along the eastern boundary of the Judum RF block II & then that of Judum RF block-I till it meets the inter dist. boundary between Angul & Cuttack dist. Then it follows the same inter district boundary till it touches northern boundary of Barabhaya revenue village. Then it runs along the eastern boundary of Barabhaya revenue village excluding the revenue villages like Barabhaya,

Kushal and Balikiari, it runs along southern boundary of Balikiari village and then follows the forest road from Balikiari to Sissupather till it touches Balikiari R.F. boundary. Then it runs towards south, then eastward along Balikiari RF of Athagarh Forest Division till it meets Nuagarh RF line near village Khola. Then it follows the eastern boundary of Nuagarh R.F. till reaches boundary of Kharuani village. Then it follows southern, western and northern boundary of Kharuani village to exclude the village from sanctuary till it reaches again the Nuagarh R.F. boundary. Then it follows the southern boundary line of Nuagarh RF till it meets the inter dist boundary of Dhenkanal & Cuttack dist. Then it turns westerly and runs along the said inter-district boundary till it reaches the trijunction point of three district namely Angul, Dhenkanal, and Cuttack.

#### ANGUL DISTRICT

The North-Eastern boundary of the sanctuary follows through the trijunction point of three districts namely Dhenkanal, Angul & Cuttack towards north along the Nuakheta R.F. boundary including the R.F. till it meets Bolang RF boundary. Then it runs the northern and western boundary of Bolong R.F. (including it) till it reaches Jocab R.F. Then it follows the eastern boundary of Jocab RF till it touches Takarsinga RF boundary near Pampasar village. The northern boundary of the sanctuary follows the boundary of Takarsinga RF till it touches Chhotamunda RF near Satbhenia nala. Then it runs along the north-eastern boundary of Chhotamunda RF, eastern boundary of Tainsi RF, northern boundary of Tainsi RF & Kumuri PF, western boundary of Tainsi RF till it reaches Baghamunda RF near Baghamunda village. Then it follows eastern & western boundary line of Baghamunda RF till it reaches Majhipada RF boundary. Then it follows the Chanagudi nala (within Hatidhara RF) in southward direction till its meets southern boundary of Hatidhara RF near village Nilamara. Then it continues with the southern boundary of Hatidhara RF till it meets the bank of river Mahanadi. Then it runs westward along the bank of river up to Olatha ferry ghat where it crosses the river Mahanadi & reaches at Harabhanga ferry ghat of Boudh

district. 11 revenue villages, as follows, have been ringed out to form Buffer area of the sanctuary.

Sl. No.	Name of village	Area in Ha.	House hold	Population
12.	Purunakote	358	171	766
13.	Gopalpur	141	83	316
14.	Chhotkei	235	93	434
15.	Tulka	204	94	455
16.	Majhipada	386	37	170
17.	Behera sahi	238	37	177
18.	Gaindi	83	66	308
19.	Karadapada	149	98	415
20.	Hatibari	282	92	443
21.	Tikarpada	152	180	684
22.	Katrang	317	69	276

Also 3 Forest villages viz. Tarava, Asanbahali and Bhurkundi will be inside the sanctuary as Buffer, as they are inside the R.F. areas. Further more, 3 Revenue villages namely Raigoda, Badakheta & Salor will be ringed out, to be relocated later on.

Sl. No.	Name of village	Area in Ha.	House hold	Population
1	Badakaheta	90	24	100
2	Salor	124	19	90
3	Raigoda	172	31	185

## BOUDH DISTRICT

The western boundary of the sanctuary runs from Harabhanga ferry ghat along the Mahanadi river bank eastward till it reaches Padmatola RF near Kankei temple. Then it runs along the western boundary of Padmatola RF, northern boundary of Arakhapadar RF till it reaches Badajore nala. It goes along the Badajore nala till it crosses the southern boundary of Arakhapadar RF near Nandagadu village. Then it follows the southern boundary of Arkhapadar RF towards east till it meets the inter-district boundary of Boudh & Nayagarh district and follows the same till it meets Mahanadi R.F. One revenue village i.e. Marada which is included within the sanctuary will be ringed out, to be relocated later on.

Name of village	Area in Ha.	Total house hold	Total Population
1. Marada	29.94	14	57

## NAYAGARH DISTRICT

The southern boundary of the sanctuary starts from the inter district boundary between Boudh & Nayagarh, place in between Padmatola dam & Bankajhari village and runs along the southern boundary and then eastern boundary of Mahanadi RF till it meets Chhamundia PRF excluding revenue villages namely Sagadabhanga and Malasapadar. Then it runs along the eastern, northern and western boundary of Chhamundia PRF and then westward along the eastern & northern boundary of Mahanadi R.F. up to end of Bethiasahi village, where it crosses the river Mahanadi along the Bethiasahi- Baliput (Cuttack district) ferry route and joins the Baliput ferry ghat. Following 6 revenue villages are included in sanctuary and will be ringed out to be relocated in future.

Name of village	Area in Ha.	Total house hold	Total Population
1. Kuturi	119	20	89
2. Bahali	37	-	-
3. Badmul	288	13	53
4. Salapaganda	11	7	41
5. Musugurha	13	5	25
6. Malisahi	-	-	-

Areas on both sides of Pampasar –Tikarpada P.W.D. road coming within the limits of the sanctuary up to 1 chain width on either side of middle of the road.

**10.1.3. Regular Staff:** After reorganization of the division during October 2003, now there are 5 Ranges, 15 Sections and 45 Beats in Satkosia Wildlife Division and 2 Ranges, 7 Sections and 22 Beats in Mahanadi Wildlife Division. As described in chapter-3 there is nearly 50% vacancy in Foresters cadre and 60% vacancy in Forest Guard cadre which are to be filled up immediately through fresh recruitment from open market. After rationalization of Sanctuary boundary the additional staff requirement is as follows:-

Forest Ranger	02
Forester	05
Forest Guard	15

There will be 3 more Forest Rangers in Crime Cell.

#### 10.1.4. Seasonal staff:

Seasonal staff of following nature will be engaged throughout the year as per the requirement mentioned below for smooth management of the sanctuary as their services are essential. It is proposed to engage 239 seasonal staff for throughout the year, 30 seasonal staff for 5 months and 156 seasonal staff for 4 months for the period mentioned below.

<u>Sl. No.</u>	<u>Nature of work</u>	<u>Period</u>	<u>No.</u>
1	Mahanadi River squad at 3 stations (Baliput, Badmul, Tikarpada)	April – March ( 12 months)  July – Nov ( 05 months)	Launch driver – 5 Launch khalasi-5 Boat majhi- 5  Squad men- 30
2	Antismuggling squad- 8 Nos. at the places mention in para 6.3.2.1.5.(b)	April-March ( 12 months)	Squad men-64
3	Anti-poaching squad – 20 Nos. at places mention in para 6.3.1.2.5.(a)	April-March ( 12 months)	Squad men-80
4	Elephant trackers-30 Nos. at places mention in para 6.3.1.2.4.	April-March ( 12 months)	Trackers- 30
5	Division mobile party 2 Nos. at Angul & Chhamundia.	April-March ( 12 months)	Attendant-04
6	Fire fighting squad at 18 places, 7 at Range headquarters and others at Bhurkindi, Baghmunda, Tulka, Tarava, Majhipada, Marada, Nuapada, Padmatola, Dhipisahi, Purunapani, Sitalpani as in para 6.3.2.2.4.	Feb-May ( 04 months)	Firemen - 108
7	Check gates at 8 places listed in para 6.3.1.2.15.	April-March ( 12 months)	Gate keeper-08
8	Fire watchers at 20 vantage points	Feb-May	Fire watchers-40



		( 04 months)	
9	VHF attendant at 16 stations	April –March ( 12 months)	Attendant-32
10	Eco tourism attendant at 4 sub zones	Nov-Feb ( 04 months)	Attendants-08
11	Mahaut of 2 elephants	April –March ( 12 months)	Mahaut-02 Attendant-02
12	Reptile Rescue Centre	April –March ( 12 months)	Pool Attendant-02

## **10.2. Staff amenities.**

In the remote sanctuary areas there is no education, health and conveyance facilities for the staff working there. Whole sanctuary area is Malaria prone. The service is arduous in nature in the above areas. The following amenities should be extended to the field staff for better protection of forest and wildlife.

### **10.2.1. Staff colony.**

Two staff colonies are to be established each at Angul and Chhamundia. Family quarters are to be constructed there and the field staff will be allowed to keep their families there.

### **10.2.2. Special Incentives.**

Special incentives of following amount will be given to the field staff mentioned against their post as incentive for posting in remote areas and for Malaria allowance.

<u>Rank</u>	<u>Special incentives / month.</u>
Forest Ranger / Deputy Ranger	Rs.2,000/-
Forester / V.F.W.	Rs.1,500/-
Forest Guard/ G.G.	Rs.1,200/-
B.C. / 4 <sup>th</sup> Grade employee	Rs.1,200/-

### **10.2.3. Mobile Health Service.**

Mobile health check up teams with vehicles are to reach the interior areas once in a week with anti-malarial medicine, other life saving medicines. Supply of medicines and health service will free of cost.

### **10.2.4. Supply of essential commodities/Green shop.**

Green vegetable, grocery and other essential items are to be supplied on payment to the staff and squad members posted in interior places once in a week as well as villager. Two vehicles will be engaged with one staff in charge.

### **10.2.5 Uniform and other accessories to seasonal staff.**

All seasonal staff are to be provided with 2 pairs of khaki uniform with sanctuary batch in a year. Accessories like torch, batteries, water bottle, lathi, hunter shoes and walkie talky with solar chargers to a squad will be supplied.

## CHAPTER – 11

### THE PLAN BUDGET

#### 11.1. THE PLAN BUDGET

The 'Plan budget' refers to the budget required to operate the Management Plan strategies and has nothing to do with the funding classification such as 'Plan' and 'Non-Plan'.

The budget has been prepared basing on estimates; for the strategies mentioned in different chapters. Budget has been prepared for 10 broad heads and strategies have been listed under them.

The Plan period is 10 years starting from the financial year 2007-08 to 2016-17. The strategy wise budget for entire 10 years period is given below with period of execution against each item. The para no. where the strategy has been described in the Management Plan is also indicated against the item.

A 10 Year break up of physical and financial target is given in para 12.1 of Chapter 12.

Sl. No	Item of work	Para No. in M.P.	Allotment for 10 years (Rs. In lakh)	Schedule of operation
<b>FOREST PROTECTION</b>				
1	Clearance of external boundary of sanctuary	6.1.1, 6.1.2.	2.31	Oct - March
2	Survey demarcation New pillar posting	6.1.3., 6.1.4., 6.1.5.	16.044	.do.
3	Maintenance of internal boundary of villages	6.1.6., 6.1.7.	24.01	.do.
4	Formation of River squad	6.2.1.4.1	140.00	July-Nov

5	Engagement of Elephant Trackers	6.3.1.2.4	80.60	Throughout the year Apr-March
6	Special Protection Force	6.3.1.2.2	60.00	.do.
7	Engagement of Ex-service men/Private security	6.3.1.2.3	72.00	.do.
8	Gang patrolling with Anti poaching squad	6.3.1.2.5 (a)	217.40	.do.
9	Anti smuggling squad	6.3.1.2.5 (b)	166.90	.do.
10	Divisional Mobile party	6.3.1.2.6	65	.do.
11	Secret fund & Reward	6.3.1.2.10, 6.3.1.2.11	3.90	Per year
12	Arms & ammunitions	6.3.1.2.12	9.00	.do.
13	Modern Gadgets	6.3.1.2.13	25.00	.do.
14	Traffic control	6.3.1.2.14	1.00	.do.
15	Check gates	6.3.1.2.15	0.80	.do.
16	Crime cell and Prosecution Unit	6.3.1.2.16	15.00	.do.
17	Vehicles for Patrolling	6.3.9.3	13.00	.do.
18	Disposal of seized timber	6.3.9.10	20.00	.do.
19	Special incentive/ amenities etc. to field staff	10.2.2	311.76	.do.
		<b>Total</b>	<b>1230.724</b>	

#### SOIL & MOISTURE CONSERVATION

1	Brush wood with loose stone	6.2.1.4.3	10.80	Nov - March
2	Gully plugging / check dam	.do.	405.00	.do.
3	Inverted Bandhara	.do.	118.50	.do.
4	Percolation Tank	-do-	1325.00	.do.
		<b>Total</b>	<b>1859.3</b>	

#### HABITAT IMPROVEMENT

1	Renovation of existing water hole	6.3.3.2.1	20.00	April-June
2	Water holes	6.3.3.2.2	216.20	Nov - March
3	Salt licks	6.3.3.2.5	16.00	Apr-June & Oct -March
4	Grazing control	6.2.1.4.4	5.00	.do.
5	Weed eradication & fodder plantation	6.3.5	100.00	June-Aug
6	Plantation	6.3.6.2.1	250.00	July-Sept
7	Thinning in JBP	6.3.7.7	5.40	Nov-Jan

8	Subsidiary silvicultural operation in bamboo	6.3.8	168.00	Nov-March
9	Removal of degraded Teak conversion to meadows	6.3.12	125.00	
10	Special Intervention to Giant Squirrel	6.3.13	15.00	
		<b>Total</b>	<b>920.6</b>	

<b>ANIMAL HEALTH SURVEILLANCE</b>				
1	Immunisation of domestic cattle	8.6.3. 6.3.4	30.00	June-Aug & Dec-Feb
2	Prevention of entry of domestic cattle to forest	6.3.3.2.4	20.00	July-Oct
3	Tranquilisation equipment	6.3.9.5. 6.3.4.2.1.	1.90	Apr-march
4	Veterinary health camp	8.6.2..	30.00	.do.
		<b>Total</b>	<b>81.9</b>	

<b>INFRASTRUCTURE DEVELOPMENT</b>				
1	Maintenance of forest roads for patrolling	6.3.1.2.7	320.00	Oct-Dec
2	Wireless net work	6.3.1.2.8	128.00	Apr-March
3	Maintenance of forest road for management intervention	6.3.9.1	294.00	Oct-Dec
4	Building and maintenance	6.3.9.2	305.00	Oct-March
5	Furniture	6.3.9.4	15.00	Apr-March
6	Equipment	6.3.9.5	33.00	.do.
		<b>Total</b>	<b>1095</b>	

<b>ECO DEVELOPMENT</b>				
1	Mitigation of Human-wildlife conflict	8.6.1	116.40	Apr-March
2	Human and Veterinary health camp	8.6.2	72.00	.do.
3	Alluring relocation package	6.2.4.5.2	140.00	.do.
4	Relocation follow up action	6.2.4.5.3	10.00	.do.
5	Creation of grass land	6.2.4.5.4	25.86	July-Sept
6	Farm forestry	8.6. 5.	13.50	July-Sept
7	Pasture land development	8.6.5.	12.00	.do.
8	Green Fencing	8.6.6.	0.72	

9	Construction of WHS, Channel	8.6.7	150.00	Dec-March
10	Sinking of dug well	8.6.8	9.00	Feb-March
11	Renovation of existing village tank, dug well, tube well	8.6.9	32.50	Apr-June
12	Supply of Agril input and subsidy to all farmers	8.6.10	8.40	.do.
13	Pisciculture	8.6.11	6.00	July-Sept
14	Promotion of traditional knowledge on herbal medicines & pharmacy	8.6.13 8.6.14	5.00	Apr-March
15	Asset Creation	8.6.17	100.00	.do.
		<b>Total</b>	<b>701.38</b>	

<b>FIRE PROTECTION</b>				
1	Fire line tracing	6.3.2.2.2	32.20	Dec-Feb
2	Watch tower & fire men	6.3.2.2.3	43.60	Feb-May
3	Fire fighting squads	6.3.2.2.4	100.00	.do.
4	Fire fighting equipments	6.3.2.2.5	13.50	
5	Participation of EDCs	6.3.2.2.6	27.30	.do.
6	Development of Data base	6.3.2.2.7	1.40	Apr-March
		<b>Total</b>	<b>218</b>	

<b>ECO TOURISM</b>				
1	Vehicles and Boats	7.4.2.1.3 7.4.2.19	43.00	Apr-March
2	Accommodation	7.4.2.1.1	51.90	.do.
3	Roads	7.4.2.1.2	19.10	Oct-Jan
4	Opportunity for children	7.4.2.4	10.00	Apr-March
5	Elephant camp/ride	7.4.2.5	84.00	
6	Basic facilities	7.4.2.6	20.00	.do.
7	Improvement in Animal sighting	7.4.2.7	5.60	Oct-Dec
8	Attended interpretation	7.4.2.8	5.40	Apr-March
9	Non attended interpretation	7.4.2.9	10.00	.do.
10	Nature trails	7.4.2.10	2.60	Oct-dec
11	Interpretation centre	7.4.2.11	22.00	Apr-March
12	Reptile Rescue Centre	7.4.2.13	13.00	
13	Conservation plot	7.4.2.15	20.00	.do.
14	Nature camp	7.4.2.16	4.00	Nov-Feb
15	Picnic spot	7.4.2.17	2.00	.do.
16	Ecotourism attendant	10.1.4	7.00	.do.

		<b>Total</b>	<b>234.60</b>	
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<b>RESEARCH AND MONITORING</b>				
1	Establishing observatories	9.1.5.1	3.20	Apr-March
2	Establishing Library	9.1.5.2	10.00	.do.
3	Establishment of museum & herbarium	9.1.5.3	10.00	
4	Study, documentation & data up keeping	9.1.6 9.1.7 9.1.8	150.00	.do.
5	Monitoring of animal population & their health (census operation)	9.2.4	18.50	Dec-Jan
6	Monitoring of vegetation	9.2.5.	3.00	July-Aug, Apr-May & Nov-Dec
7	Monitoring of protection measures	9.2.8 9.2.9 9.2.10	2.00	March-May
		<b>Total</b>	<b>196.7</b>	

<b>AWARENESS &amp; TRAINING</b>				
1	Awareness on mitigation of human-wild animal conflict	8.6.1.4	3.00	Sept-Oct & Apr-May
2	Motivation for Relocation	6.2.4.5.5	0.40	
3	Awareness training on fire protection	6.3.2.2.1	5.00	Jan-Feb
4	Arms Training	6.3.1.2.12 c	2.00	
5	Orientation of staff as Eco-tourism	7.4.2.18	2.30	Sept-Oct
6	Training and documentation on Traditional herbal medicines	8.6.13	2.00	Feb-March
7	Awareness education	8.3.19	6.00	Nov-Feb
8	On job training to staff	9.3	1.00	Apr-March
		<b>Total</b>	<b>21.7</b>	
<b>GRAND TOTAL</b>			<b>6585.75</b>	

## ABSTRACT

Sl. No.	Items	Amount in Lakh Rs	Percentage
1	Forest Protection	1256.57	<b>19.08</b>
2	Soil & Moisture conservation	1859.30	<b>28.23</b>
3	Habitat Improvement	920.60	<b>13.98</b>
4	Animal Surveillance	81.90	<b>1.24</b>
5	Infrastructure Development	1095.00	<b>16.63</b>
6	Eco-Development	701.38	<b>10.65</b>
7	Fire Protection	218.00	<b>3.31</b>
8	Eco-Tourism	234.60	<b>3.56</b>
9	Researching and monitoring	196.70	<b>2.99</b>
10	Awareness and training	21.70	<b>0.33</b>
	<b>GRAND TOTAL</b>	<b>6585.75</b>	<b>100.00</b>

**(Rupees Sixty five crore Eighty five lakh Seventy five thousand only)**

### **Source of Fund.**

Source need to be explored from various agencies like Government of India, State Government, D.R.D.A., Watershed Mission, NGOs, International and National Organisations like WWF, WII, Born free Foundation, USDFWL etc.



## CHAPTER – 12

### THE SCHEDULE OF OPERATIONS AND MISCELLANEOUS REGULATIONS

#### 12.1 The Schedule.

The 10 years plan period starts from 2006-07 financial year and continue up to 2015-16. All the prescribed activities will be completed within the plan period. Therefore year-wise break up of activities with physical and financial target has been described in a tabular manner at **Table No.12.1** at the end of the chapter.

#### 12.2 Record of deviation and implemented target.

One record of deviation will be maintained for Satkosia to keep record of deviations from the prescriptions. This will include annually deferred targets and strategies put off for indefinite period. The new strategies, not included in the plan will be included. This record is to be maintained strategy-wise like forest protection, fire protection, maintenance of water holes, weed control etc. in the following proforma.

Sl. No.	Name of strategy	Physical target/ financial target	Physical achievement/ Financial achievement	Shortfall omission or addition	Reason of deviation

### **12.3 The record of employment potential.**

The over all responsibility for implementation of all the prescribed strategies lies with the following officers.

D.F.O.-2, A.C.F.-2, Forest Ranger/Dy Ranger-7, Forester-22, Forest Guard-67, F.E.O.-2, V.F.W.-8 and field staff attached to Division Office and Range Offices. Seasonal staff on daily wage basis will be engaged as and when required as per the plan.

When the Annual Plan of Operation (APO) is prepared the employment generation potential in different activities will be determined basing on the detail estimate for the work.

### **12.4 Control Forms.**

Control forms will be maintained at Division office level for tracking the annual progress of various strategies for evaluation of prescriptions, impact of activities and problems in implementations. Control forms will be maintained separately for different strategies and will be updated annually. Different control forms are available in the Sawarkar's Manual for planning Wildlife Management in Protected Areas and Managed forest.

FORM WM-1	Creation of new artificial water holes.
FORM WM-1.1	Maintenance of water holes: natural.
FORM WM-1.2	Maintenance of water holes: artificial.
FORM WM-2	Restoration of habitat: weed control, initial operation.
FORM WM-2.1	Restoration of habitat: weed control, subsequent operations.

FORM WM-2.2	Restoration of habitat: control of regeneration of woody species in grass land.
FORM WM-2.3	Restoration of habitat: Prescribed burning.
FORM WM-2.4	Restoration of habitat: Soil conservation measures- initial operations and subsequent maintenance.
FORM WM-2.5	Restoration of habitat: planting, Sowing- initial operation.
FORM WM-2.6	Restoration of habitat: Planting, sowing and subsequent operations.
FORM WM-2.7	Restoration of habitat: area under protection/closure.
FORM WM-3	Animals: Measuring trends in populations.
FORM WM-3.1	Animals: New records.
FORM WM-3.2	Animals: Mortality other than that attributable to an offence.
FORM WM-3.3	Animals: Mortality attributed to poaching on an act of vandalism.
FORM WM-3.4	Animals: Predation on domestic livestock by wild carnivores.
FORM WM-3.5	Animals: Killing of a human by wildlife or injury caused.
FORM WM-3.6	Animals: Wildlife damage to private on public property.
FORM WM-4	Plants: New records.
FORM WM-4.1	Plants: Disease and mortality.
FORM WM-4.2	Plants: Illegal and legal collection.
FORM WM-4.3	Timber out-turn and revenue.

FORM WM-4.4	Firewood out-turn and revenue.
FORM WM-4.5	Out turn of charcoal and revenue.
FORM WM-4.6	Extraction of bamboo and disposal.
FORM WM-4.7	Distribution of forest produce under nistar and other concessions including free grant.
FORM WM-4.8	NWP collection: Plants and other produce.
FORM WM-5	Grazing of domestic livestock.
FORM WM-6	Inter-agency programmes: agencies and schemes (Government)
FORM WM-6.1	Programmes of NGOs.
FORM WM-7	Construction*/Maintenance* of infrastructure: roads & bridges(*existing/New).
FORM WM-7.1	Construction* / Maintenance* of infrastructure: building (*Existing / New)
FORM WM-7.2	Development* / Maintenance* of infrastructure: communication (*Existing / New)
FORM WM-7.3	Development* / Maintenance* of infrastructure: vehicles (*Existing / New)
FORM WM-7.4	Development of infrastructure: manpower recruitment* / existing manpower*.
FORM WM-7.5	Development of infrastructure: construction of boundaries, fences, CPTs, EPTs, enclosures, enclosures(*Existing/New).

FORM WM-7.6	Developing infrastructure: firelines(*Existing/New).
FORM WM-8	Tourism.
FORM WM-8.1	Tourism: Use of tourist facilities-lodging.
FORM WM-8.2	Tourism: Use of tourist facilities-field trips.
FORM WM-9	Outbreak of fires.
FORM WM-10	Offence cases detected.
FORM WM-11	Incentives and awards.
FORM WM-12	Research projects under implementation through PA manpower with or without collaboration with other agencies.
FORM WM-12.1	Research projects under implementation by other agencies.
FORM WM-13	Survey and inventories.
FORM WM-14	The monitoring programme.
FORM WM-15	Eco-development programme: targets and implementations.
FORM WM-16	Progress of all strategies under the zone and theme plans.
FORM WM-17	Progress of legal settlements under the Wildlife(Protection)Act,1972 in context of attainment of the status of a WLS/NP.
FORM WM-18	A summary of allotment of funds, revenue and expenditure.

## 12.5 Maintenance of Compartment History.

Compartment history for every compartment will be opened in duplicate where important features of the compartment, sub compartment, forest type, past

management, present management prescriptions will be written. This compartment history will be annually updated by the Range Forest Officers. The important incidents, occurrence, changes, activities will be recorded there without fail. This compartment history will be kept in Range Office till further revision of the plan. One sample copy of compartment History is enclosed in **Appendix-22**

### **12.6 A Pocket Field Guide for Plan implementation.**

This looks like Forester's Field note book. Size is 10 cm x 10 cm, opens vertically. This is to be carried by field officers in their pocket for their reference. The field guide is meant to present the essence of the plan strategy applications, complete in all technical details and the regulations concerned with respect to each strategy as might be deemed relevant. It is field action document to be written by all such field officers coping from the Management Plan. It may include the maps in miniature form, all zonal strategies and individual zonal strategies.

### **GLOSSARY**

- Biodiversity:** The variety of life and its process, including complexity of species, communities, gene pools, and ecological functions.
- Flora:** The plant community exist in an area which includes tree, shrub, herb, grass, ferns etc..
- Fauna:** The list of animals present in a place which included mammal, birds, reptiles, fishes, amphibians, insects, butterflies, spiders, arachnids, parasites, annelids.

- Key area:** Areas that offer key habitat functions for a species, such as breeding, fawning, roosting, ousting or those that have obligate species, biological or geomorphic in nature.
- Land scape:** Large ecological units which function as integrated bio regions, containing national parks, sanctuaries, all or some combination of legal and functional categories of forests, village systems, lands under various ownership and land use categories and waste lands (Hotthausen, Sawarkar, Darder,1991).
- Limiting factor:** The environmental influence through which the toleration limit of an organism is first reached, which acts, therefore, as the immediate restriction in one or more of its functions or activities or in its geographic distribution (Hanson 1962).
- Mesic site:** Environmental situations characterized by moderate to moderately high moist conditions due to the presence of springs, seeps or attributable to edaphic characters. Excludes riparian system.
- Pinch period:** A season during which either forest or water or both are minimal in their quantity, quality and distribution causing stress in animal population. Generally the term addresses the welfare of herbivores species.

- Riparian zone:** An area identified by the presence of vegetation that requires free or unbound water or conditions more moist than normally found in the area (Minore and Smith 1971, Franklin and Dryness 1973).
- Special habitat:** A habitat which has a special function not provided by plant communities and successional stages, includes riparian zone, snags, dead and down woody materials and edge. Biological in nature, can be created or altered by management (Thomas 1979).
- Talus:** The accumulation of broken rocks that occurs at the base of cliffs or other steep slopes. (Thomas 1979).
- Unique Habitats:** Wildlife habitats of special function not included within the plant communities and successional stages or special habitats. They are geomorphic in nature e.g. cliff, cave, overhangs, shelves or ledge talus, crevices, key areas.
- Zone of influence:** The extent of area outside the legal PA boundaries over which wildlife damage problems of significance occur; excluding damage caused by itinerant elephant population not necessarily dependant on the PA and the extent of area settled by villages with people having a traditional PA based resource dependence, whichever is the greater area in extent. This is also considered as buffer zone.



### ABBREVIATIONS USED

<b>ACF</b>	Assistant Conservator of Forests
<b>CWLW</b>	Chief Wildlife Warden
<b>CEE</b>	Centre for Environment Education
<b>CPT</b>	Cattle Proof Trench
<b>DCF</b>	Deputy Conservator of Forests
<b>DPF</b>	Demarcated Protected Forest
<b>DRDA</b>	District Rural Development Agency
<b>EDC</b>	Eco Development Committee
<b>EPT</b>	Elephant Proof Trench
<b>FD</b>	Field Director
<b>FMD</b>	Foot & Mouth Disease
<b>FRI</b>	Forest Research Institute
<b>GIS</b>	Geographical Information System
<b>GPS</b>	Global Positioning System
<b>IUCN</b>	International Union for Conservation of Nature and Natural Sources
<b>JFM</b>	Joint Forest Management
<b>JFMC</b>	Joint Forest Management Committee
<b>JVP</b>	Jagannath Vana Prakalpa
<b>M&amp;E</b>	Monitoring and Evaluation

<b>MFP</b>	Minor Forest Produce
<b>MPO</b>	Management Plan Officer
<b>MTR</b>	Melghat Tiger Reserve
<b>MP</b>	Management Plan
<b>NGO</b>	Non Government Organisation
<b>NP</b>	National Park
<b>NWFP</b>	Non Wood Forest Produce
<b>NTFP</b>	Non Timber Forest Produce
<b>PA</b>	Protected Area
<b>PRA</b>	Participatory Rural Appraisal
<b>PRF</b>	Proposed Reserved Forest
<b>PWD</b>	Public Works Department
<b>RF</b>	Reserved Forest
<b>TUZ</b>	Traditional Use Zone
<b>UNDP</b>	United Nations Development Programme
<b>USDFWL</b>	United States Department of Fisheries & Wildlife
<b>VSS</b>	Vana Samrakhyana Samiti
<b>WII</b>	Wildlife Institute of India
<b>WLS</b>	Wildlife Sanctuary
<b>WWF</b>	World Wide Fund for nature conservation
<b>ZI</b>	Zone of Influence
<b>ZP</b>	Zilla Parishad

## REFERENCES

1. A Manual for Planning Wildlife Management in Protected Areas and Managed forests by Vishwas. B.Sawarkar, WII, D. Dun.
2. Dr. C.R. Mohapatra's Working Plan for Angul (T) Division for the period 1970 – 1990.
3. Sri B.P.Singh's Working Plan for Angul (T) Division for 1990- 91 to 1999-2000.
4. Mr. S.B.Das's Working for Rairakhol Division for the period 1965 to 1985.
5. Mr. Dinesh Singh's Working Plan for Athamallik Division for 1985 to 2005.
6. Sri N.C. Bal's Working Plan for Nayagarh Division for the period 1983-84 to 2002-03.
7. Sri Basudev Mohapatra's Plan for Boudh Division for 1975-76 to 1994-95.
8. Sri G. Mohapatra's Working Plan for Athgarh Division for
9. First Management Plan for Satkosia Gorge Sanctuary prepared by Sri A.K.Mishra for the period 2000 to 2010.
10. Rainfall, Temperature Data from Central Water Commission at Tikarapada.
11. Rainfall, Temperature, Humidity data from Office of Collector, Angul District.

**FORM WM - 1  
CREATION OF NEW ARTIFICIAL WATERHOLES**

Sr. No.	Category	Year	Location	Cost	Performance
1.	2.	3.	4.	5.	6.

**Note :** Category : Masonry anicut, earthen bund, lined depression, borewell and pump, reservoir, spring fed, tanker fed, guzzler, aquifer; permanent or temporary  
 Location : By compartment or by a named feature and name given if any  
 Performance : Successful, partially successful, failure (give reasons for the latter two)

**FORM WM - 1.1  
MAINTENANCE OF WATERHOLES : NATURAL**

Sr. No.	Category	Perennial or seasonal	Location	Year	Nature of work	Cost	Performance
1	2	3	4	5	6	7	8

**Note :** Category : Spring, seep, natural depression, a flowing stretch, reservoir  
 Location : By compartment or by a named feature and name given if any  
 Nature of work : Desilting, provision of apron, any other category  
 Performance : Successful, partially successful, failure (reasons for the last two)

**FORM WM - 1.2**  
**MAINTENANCE OF WATERHOLES : ARTIFICIAL**

Sr. No.	Category	Perennial or seasonal	Location	Year	Nature of work	Cost	Performance
1	2	3	4	5	6	7	8

**Note :** Category : Masonry anicut, earthen bund, lined depression, borewell and pump, spring fed, tanker fed, guzzler, aquifer etc.

Location : By compartment or by named feature and name given if any.

Year : Year of maintenance, with year of establishment in parenthesis.

Nature of work : Desilting, grouting, repairing leaks, repair to mechanical parts, closing anicut openings, any other work.

Performance : Successful, partially successful, failure (reasons for the latter two).

**FORM WM - 2**  
**RESTORATION OF HABITAT : WEED CONTROL, INITIAL OPERATION**

Sr. No.	Location & name of site	Year Extent of Species of	Extent area (ha)	Species of weed	Operation	Total cost weed ha	Cost per	Remarks
1	2	3	4	5	6	7	8	9

**Note :** Location : By compartment, site name or land feature

Operation : Uprooting, cutting, burning, ploughing, manual or by using animals or machinery

Remarks : Measure of success and/or problem faced.

**FORM WM - 2.1**

**RESTORATION OF HABITAT : WEED CONTROL, SUBSEQUENT OPERATIONS**

Sr. No.	Location & name of site	Year	Extent of area(ha)	Complete or partial coverage	Species of weed	Operation	Total Cost	Cost per(ha)	Remarks
1	2	3	4	5	6	7	8	9	10

**Note :** Location : By compartment, site name or land feature

Operation : Uprooting, cutting, burning, ploughing, manual or by using animals or machinery.

Remarks : Percent cover of weed/s before operation, problems, if any

**FORM WM - 2.2**

**RESTORATION OF HABITAT : CONTROL OF REGENERATION OF WOODY SPECIES IN GRASSLANDS**

Sr. No	. Location & name of site	Year	Extent of area (ha)	Species controlled	Operation	Total cost	Cost per ha	Remarks
1	2	3	4	5	6	7	8	9

**Note :** Location : By compartment, site name, etc.

Species controlled : List the species.

Operation : Uprooting, cutting, burning etc. manual or mechanised methods.

Remarks : The measure of success, suitability of methods, problems encountered.

**FORM WM - 2.3**  
**RESTORATION OF HABITAT : PRESCRIBED BURNING**

Sr. No	. Location & name of site	Year	Extent of area (ha)	Area treated (ha)	Period	Total cost	Cost per ha	Remarks
1	2	3	4	5	6	7	8	9

**Note :** Location : By compartments or name of site.  
 Period : Date of starting operation and completion.  
 Remarks : Mention resultant structure e.g. a mosaic, % burnt, % intact.  
 Problems encountered in conducting the operation - e.g. fire escape.

**FORM WM - 2.4**  
**RESTORATION OF HABITAT : SOIL CONSERVATION MEASURES - INITIAL OPERATIONS AND SUBSEQUENT MAINTENANCE**

Sr. No	. Location & name of site	Year	Extent of area (ha)	Area treated (ha)	Period	Total cost	Cost per ha	Remarks
1	2	3	4	5	6	7	8	9

**Note :** Location : By compartments, name of site or landmarks.  
 Extent of area : Total area identified for such treatment. In case of streams or gullies, the length involved.  
 Area Treated : If linear feature then quote length; otherwise area.  
 Operation : Structures involved such as gully plugs, trench-cum-mound, terracing, spurs and bunds etc. quote quantity nos. and cmt. of earthwork.  
 Remarks : Mention if initial work or maintenance.

**FORM WM - 2.5**

**RESTORATION OF HABITAT : PLANTING, SOWING - INITIAL OPERATION**

Sr. No	Location	Year	Extent of area (ha)	species	Planting stock Spacing	Spacing	Operation	Total Cost per ha	Cost per(ha)	Remarks
1	2	3	4	5	6	7	8	9	10	11

**Note** : Location : By compartments, or landmarks and describe the site factors e.g. vegetation cover, soil, perturbations etc.  
 Planting Stock : Kind and condition e.g. root shoot, naked root seedling, seedlings in polythene bags, age or average size.  
 Operation : Mention site preparation if any, crowbar holes, pits and pit size, trench, seed sowing (rate), tussock planting (norms), protection measures.  
 Remarks : Mention operational problems if any

**FORM WM - 2.6**

**RESTORATION OF HABITAT : RESPONSE OF PLANTINGS, SOWINGS AND SUBSEQUENT OPERATIONS**

Sr. No.	Location	Year	Extent of area (ha)	Species	Survival %	Casualty Replacement	Operations	Total Cost	cost per (ha)	Remarks
1	2	3	4	5	6	7	8	9	10	11

**Note** : Location : By compartments, or landmarks.  
 Casualty replacement : Mention planting stock by species, number & kind (polythene bag, root shoot, rhizome etc).  
 Operations : Planting, sowing technique, protection measures.  
 Remarks : Operational problems, protection problems, any other useful information.  
 Assess & mention survival percentage & growth before taking up casualty replacement.



**FORM WM - 2.7**  
**RESTORATION OF HABITAT : AREA UNDER PROTECTION/CLOSURE**

Sr. No.	Location	Year	Extent of area (ha )	Description of site	Regulations or protection measures	Response	Remarks
1	2	3	4	5	6	7	8

**Note :** Location : By compartment or landmarks

Description of site : % tree, shrub, ground cover, main species, impact of factors causing perturbations.

Regulations & : Social fencing, power or other kind of fencing, enforced protection by patrolling, protection measures fire protection etc.

Response : To be recorded annually. Consider trend of regeneration, vegetation cover, change in structure and composition, wildlife use index.

Remarks : State problems or any other useful information, including alternatives if area being used by people for specific

**FORM WM - 3**  
**ANIMALS : MEASURING TRENDS IN POPULATIONS (YEAR )**

Sr. No.	Species	Population estimation methodology	Adult		Sub-adults		Yearlings	Fawns	Cubs	Total	Remarks
			Male	female	Male	Female					
1	2	3	4	5	6	7	8	9	10	11	12

**Note :** Population : e.g. pugmark, line transect, scan, roadside counts etc., area covered, sampling intensity, estimation data treatment, extrapolation where involved. In case of indices of density or dung count mention those figures under the remarks'

column; use details as pertinent. Describe age classes for each species.

Remarks : Operational problems, protection problems, any other useful information.

Indices of density or dung count details to be recorded here.

**FORM WM - 3.1  
ANIMALS : NEW RECORDS**

Sr. No	. Species	Location	Year	How discovered	Details of number age, sex,	Habitat description	Remarks
1	2	3	4	5	6	7	8

**Note :** Animals will include vertebrates and invertebrates.

How discovered : Sighting, dead specimen, reliability of sighting, captured specimen, incontrovertible other evidence.

Number, age, sex etc : As applicable to vertebrates.

Habitat description : Broad habitat description such as vegetation, and elements such as water, large old trees, den trees, snags, down log material.

Use microhabitat descriptors only if relevant.

Remarks : Any other useful information.

**FORM WM - 3.2  
ANIMALS : MORTALITY OTHER THAN THAT ATTRIBUTABLE TO AN OFFENCE**

Sr. No.	Species	Location	Year	Sex & age	Number	Discovered in what condition	Cause of mortality	Remarks
1	2	3	4	5	6	7	8	9

**Note :** Location : By compartment, landmark etc.

Sex & age : As per parameters for age class. Sex, if possible to identify.

Discovered in what condition : Carcass, complete or partial. Skull or any other recognisable remains collected where only some remains of an animal are found.

Cause of mortality : If known e.g. territorial fight, accident, possible disease (following postmortem results), old age, cause difficult to determine, predation etc.

Remarks : Any other useful information.

**FORM WM - 3.3**

**ANIMALS : MORTALITY ATTRIBUTED TO POACHING OR AN ACT OF VANDALISM**

Sr. No.	Species	Location	Cause of mortality				Remarks
			Number	sex	age	class	
1	2	3	4				5

**Note :** Location : By compartments or landmarks.

Cause of mortality : Whether the animal was intact or remains found, article or trophy to be recorded. Cause if known e.g. animal snared, shot or poisoned etc.

Remarks : Any other useful information, especially matters of illegal trade.

**FORM WM - 3.4**

**ANIMALS : PREDATION ON DOMESTIC LIVESTOCK BY WILD CARNIVORES**

Sr. No	. Range	Month	Category of livestock killed	Location	Numbers	Ex gratia payment (Rs.)	Carnivore involved cases	No of cases undecided	Remarks
1	2	3	4	5	6	7	8	9	10

**Note :** Category of livestock killed : Buffalo, cow, bullock (adult, sub-adult, calf), camel, horse, donkey, sheep, goat, poultry etc.

Location : Comptt. no. or landmark where killed and the village of the owner.

Carnivore involved : Indicate species responsible for the kill if identity is confirmed.

No. of cases undecided : Either in progress or dropped.

Remarks : Record observations like - attended or unattended animal, killed in forest or waterhole or in the pen/shed, field and whether kill was in area closed to livestock

**FORM WM - 3.5**

**ANIMALS : KILLING OF A HUMAN BY WILDLIFE OR INJURY CAUSED**

Sr. No.	Range	Month	No. of incidents	No. of killed, age & sex	people Location circumstances & species	No. of people injured, age and sex	Location circumstance and species	Ex gratia Payment (Rs)
1	2	3	4	5	6	7	8	9

**Note :** Location, : Location by comptt no., the village to which the person belongs and a description of the circumstances and activity such as - open grassy patch, cutting grass; or under a mahua tree collecting and species flowers etc. Mention species responsible on

**FORM WM - 3.6**

**ANIMALS : WILDLIFE DAMAGE TO PRIVATE OR PUBLIC PROPERTY**

Sr. No	. Range	Month	The category of property	Extent of damage	Species involved and number	Remarks
1	2	3	4	5	6	7

**Note :** Location : By comptt. no., village survey no., name of village or landmark.  
 Category of property : e.g. agriculture field-wheat, huts in a village, any kind of vehicle.  
 Extent of damage : Crop damage by area, estimated loss of produce and monetary loss. Similar yardsticks for other items like partial or total destruction of huts and belongings with estimated monetary loss.  
 Remarks : Any relevant information or circumstances e.g. a wild elephant was provoked by

**FORM WM - 4**  
**PLANTS : NEW RECORDS**

Sr. No.	Family	Species	Year	Location	Habitat	Status	Remarks
1	2	3	4	5	6	7	8

**Note :** Habitat : Description by vegetation associates at various levels, % canopy closure if relevant, soil/site, microhabitat elements such as higher level of moisture, woody debris or humus etc.  
 Status : A broad idea on its frequency, national status e.g. endangered, rare, endemic etc.  
 Remarks : Any specific information.

**FORM WM - 4.1**  
**PLANTS : DISEASE AND MORTALITY**

Sr. No	. Species	Location	Year	Particulars of disease morbidity & mortality	Area affected	Remarks
1	2	3	4	5	6	7

**Note :** Location : By compartment or landmarks.  
 Particulars of disease : In case of trees, the mortality by diameter classes and number, symptoms, insect pest activity or any other external indicators if visible, none if not seen. No mortality but infestation detected, mention that as morbidity.  
 Area affected : In hectares.  
 Remarks : Any specific environmental condition, or site factors you may suspect as being related to the problem or any other useful information.

**FORM WM - 4.2**  
**PLANTS : ILLEGAL AND LEGAL COLLECTION**

Sr. No	. Year	Species	Location	Details of material	Quantity	Trade particulars Remarks	
1	2	3	4	5	6	7	8

**Note** : Location : By compartments or landmarks.

Details of material : To include timber, firewood, bamboo, NWPs. Plants collected could be of local significance or of trade significance on a national or international scale. Distinguish between legal and illegal activity in the remarks' column.

Quantity : In appropriation units.

Trade particulars : What is traded ? Portions, partially processed or processed material and where are the major trade centres, known or suspected to be ?

Remarks : Any other useful information.

Legal collection applies to PA, if permitted for research; to TUZ or to the buffer

**FORM WM - 4.3**  
**TIMBER OUT-TURN AND REVENUE**

<b>YEAR</b>							
Sr. No	. Range	Timber species)	Volume extracted cmt. in grade	Volume auctioned cmt. in grade	Amount (Rs)	Price/cmt/ (Rs) grade	Unsanctioned volume cmt. in grade
1	2	3	4	5	6	7	8

**Note** : Range : Provide depot-wise information. This applies to the buffer zone.

**FORM WM - 4.4**  
**FIREWOOD OUT-TURN AND REVENUE**  
**YEAR AND DEPOT**

Sr. No.	Range	Firewood species	Volume extracted cmt.	Volume auctioned cmt.	Amount (Rs)	Price/ cmt. t (Rs)	Disposal pattern of firewood in cmt.	
							Local	Otjher areas
1	2	3	4	5	6	7	8	9

**Note :** Range : Provide depot-wise information. If sold in situ mention as such. Applies to bufferzone.  
Disposal Pattern : `Local' connotes the share of villages identified as those inhabited by forest dependent communities, in TUZ & ZI.  
The nistar component should have special mention.

**FORM WM - 4.5**  
**OUT-TURN OF CHARCOAL AND REVENUE YEAR AND DEPOT**

Sr. No.	Range	Species used	Volumet tonnes	Converted charcoal quantity tonnes	Conversion factor	Quantity sold	Total amount per tonne(Rs)	Disposal pattern in tonnes	
								local	Other areas
1	2	3	4	5	6	7	8	9	10

**Note :** Range : Give depot-wise details. If sold in situ mention as such. Applies to bufferzone.  
Disposal Pattern : As per note under form WM 4.4

**FORM WM - 4.6**  
**Extraction of bamboo and disposal**  
**Year**

Sr. No.	Range	Species	Quantity extracted by category		Disposal, non-commercial by quantity		Revenue realized (Rs)		Undisposed quantity	
			Commercial	Non-commercial	Localy	Other areas	Commercial	Non-commercial	Commercial	Non-commercial
1	2	3	4	5	6	7	8	9	10	11

**Note :** Quantity extracted, in notional tonnes or numbers as applicable.

Disposal : Local & other areas - the connotation is as mentioned under form WM 4.4.

**FORM WM - 4.7**  
**DISTRIBUTION OF FOREST PRODUCE UNDER NISTAR AND OTHER CONCESSIONS**  
**INCLUDING FREE GRANT**  
**YEAR**

Sr. No.	Range	Produce category	Species	Quantity.	Village	No. of families	Revenue(Rs)	Free of charge qty
1	2	3	4	5	6	7	8	9

**Note :** Produce category : Small timber, poles, bamboo, firewood, charcoal, etc.

Species : As applicable

Quantity : Use appropriate units

**FORM WM - 4.8**  
**NWP COLLECTION : PLANTS AND OTHER PRODUCE**  
**YEAR**

Sr. No.	Range	Kind of produce	Species	Quantity	Revenue realised(Rs)	Free of charge quantity	Agency involved	
							Local people	Outsiders
1	2	3	4	5	6	7	8	

**Note :** Kind of produce : Mention name, can be biological or geomorphic in origin.

Species : As applicable

Quantity : Use the appropriate unit.

Local people : Applies to people within TUZ & ZI (buffer).

This return normally applies to TUZ & buffer. If practice exists within the PA, make a special mention.



**FORM WM - 5**  
**GRAZING OF DOMESTIC LIVESTOCK**  
**YEAR**

Sr. No.	Grazing unit No.	List of villages in the unit	Village-wise listed population of cattle	Capacity of the unit(cattle units) and number of cattle grazed.	Total cattle units grazed		Remarks
					Legal	Illegal	
1	2	3	4	5	6	7	8

**Note :** Remarks : (i) Mention number of cattle immunized against FMD, RP, anthrax as the case might be and the number of cattle without the prophylactic cover.

(ii) If grass is allowed to be cut for cattle being stall-fed, mention the village and number of such cattle.

**FORM WM - 6**  
**INTER-AGENCY PROGRAMMES : AGENCIES AND SCHEMES (GOVERNMENT)**  
**YEAR**

Sr. No	Name of agency	Central or State	Number and name of scheme operated	Physical and financial targets		Area & location	.Remarks
				Given	Achieved		
1	2	3	4	5	6	7	8

**Note :** Name of the scheme : To include all activities in the Govt. sector, i.e. construction, use of resources, development processes etc. mention names of schemes, projects or normal operations. This will address all departments in the management area and those activities outside but capable of influencing the management area.

Remarks: Success, adverse impacts, incompatibility with PA management objectives or failures should be mentioned. Detailed notes to go in the PA book.

**FORM WM - 6.1**  
**PROGRAMMES OF NGOS**  
**YEAR**

Sr. No	Name of agency	HQ location	Nature of the scheme operated	Physical and financial targets		Area & location	Remarks
				Given	Achieved		
1	2	3	4	5	6	7	8

**Note :** Remarks : Success or adverse impacts, incompatibility with PA management objectives or failures should be mentioned.

Detailed notes to go in the PA book. These programmes and activities could be within the management area or those that are outside the management area but are capable of influencing the state of the management area - either complementing the efforts or adversely impacting.

**FORM WM - 7**  
**CONSTRUCTION\*/MAINTENANCE\* OF INFRASTRUCTURE : ROADS & BRIDGES**  
**(\*EXISTING/NEW)**  
**YEAR**

Sr. No.	Category	Range	Surface	Name or number	Length covered (km)	Cross drainage works, bridges or culverts with types	Total cost and status
1	2	3	4	5	6	7	8

**Note :** Category of road : National highway, State highway, district road etc. public road, forest road or open only to managers should be stated.

Surface type : Black topped, metal, earth etc. Applies to roads.

Name or number : As the case may be.

Cross drainage type : e.g. for culverts - box, hume pipe culverts etc.

Bridge type : Wooden trestle, suspension, metal multi span, masonry arch etc.

Status : Work completed or ongoing. State also the agency responsibility; state whether operational or non-operational.

\* : Strike out which is not applicable. Use separate forms as required; for construction & for maintenance details.

**FORM WM - 7.1**  
**CONSTRUCTION\*/MAINTENANCE\* OF INFRASTRUCTURE : BUILDINGS**  
**(\*EXISTING/NEW)**  
**YEAR**

Sr. No	Range	Nature of the building	Location	Type of construction	Numbers	Total cost	Status
1	2	3	4	5	6	7	8

**Note :**

Nature of the building : e.g. residential, office, store, chauki, watch tower, tourist facility, hide, barrier, patrolling camp (temporary or permanent) etc.

Location : By compartment or village or landmark as appropriate.

Type of construction : Masonry (brick/stone), log or wooden, metal, local material etc.

Status : Completed or ongoing.

\* : Strike out which is not applicable. Use separate forms as required; for construction and for maintenance details.

**FORM WM - 7.3**  
**DEVELOPMENT\*/MAINTENANCE\* OF INFRASTRUCTURE : VEHICLES (\*EXISTING/NEW)**  
**YEAR**

Sr. No.	Kind of vehicle	Number	HQ if any	Intended use	Cost	Remarks
1	2	3	4	5	6	7

**Note :** Kind of vehicle : Jeep, trailer, tractor, truck, minibus, tanker, motorcycle, bicycle, boat (paddle or motor), launch, car, riding elephant, ponies, etc.

Intended use : Management support, patrolling/antipoaching, tourism etc.

Remarks : Any other useful information. Mention written off vehicles, retired or dead animals.

\* : Strike out the inapplicable. Use separate forms as required to indicate acquisition, maintenance.

**FORM WM - 7.4**  
**DEVELOPMENT OF INFRASTRUCTURE : MANPOWER RECRUITMENT\*/EXISTING**  
**MANPOWER\***  
**YEAR**

Sr. No.	Category of post	Number	Status		Scale of Pay	Intended Deployment/ deployed as	Remarks
			Recruited	Vacant			
1	2	3	4	5	6	7	8

**Note** : Status : Permanent, temporary, contractual.

Intended deployment : State purpose e.g. conservation education, research, antipoaching, etc as applicable.

Remarks : Any other useful information. New recruits within the year should be mentioned. This will also include officers & staff obtained on transfer/

deputation. Likewise changes due to personnel going out on transfer, deputation, retirement, removal, resignation, death should be reflected in this column.

\* : Strike off that which is not applicable. Accordingly, use additional forms. One for recruitment and one for the existing manpower

**FORM WM - 7.5**  
**DEVELOPING INFRASTRUCTURE : CONSTRUCTION OF BOUNDARIES, FENCES, CPTS,**  
**EPTS, ENCLOSURES,**  
**ENCLOSURES (\*EXISTING/NEW)**  
**YEAR**

Sr. No	Category of construction	Range	Location	Length (meters)	Numbers	Specifications	Remarks
1	2	3	4	5	6	7	8

**Note** : Category : Kind of boundary e.g. comptt, block, zone etc. In case of fences: power fence, others.

Location : By compartment or suitable landmark.

Numbers : In case of enclosures, enclosures, number of pillars etc. as applicable.

Specifications : As applicable to the construction: dry rubble, chain link, local material, height, area, depth, width etc.

Remarks : Any other relevant information.

\* : Strike out that is inapplicable. Use a form each for maintenance of existing features and for new features.

**ORM WM - 7.6**  
**DEVELOPING INFRASTRUCTURE : FIRELINES (\*EXISTING/NEW)**  
**YEAR**

Sr. No	Range	Fireline category and width	Name of points connected	Length (meters)	Cost	Remarks
1	2	3	4	5	6	7

**Note** : Category : Main or subsidiary etc.

\* : Strike out that which is inapplicable. Use one form each for maintenance of existing fireline and creation of new.

**FORM WM - 8  
TOURISM YEAR**

Total number of visitors all categories

Total revenue earned:

Name of complex:

Sr.No.	The Category of visitors by month & number					Indian			No. day visitors	No staying over night and Revenue
	Adult		Children	Foreigners	Rural	Urban	Revenue			
Month	Male	Female								
1	23	3	4	5	6	7	8	9	10	11

1 2 3 4 5 6 7 8 9 10 11

**Note** : col. 6. Second and third line details rural and urban tourists respectively. Put a tick (☑) in Col. 7, Column 8 as applicable.

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**FORM WM - 8.1  
TOURISM : USE OF TOURIST FACILITIES - LODGING  
YEAR**

Name of complex:

Class of accommodation:

Capacity (beds):

Sr. No	. Month	Month capacity(beds/month)	Occupancy(beds/month)		Total occupancy during the month (beds/month)
			Foreign	Indian	
1	2	3	4	5	6

**Note** : Class of : Classify accommodation as per tariff slabs and if applicable, might include different rate

Accommodation structure for the same set viz. for Indians and foreign tourists. The highest class for example will be I for AC rooms, IV for tents etc.

Use a fresh form for each class of accommodation.

Month Capacity : Number of days in a month x total number of beds available in that class per night

**FORM WM - 8.2**  
**TOURISM : USE OF TOURIST FACILITIES - FIELD TRIPS**  
**YEAR**

Name of complex

Sr. No	Month	Riding elephant use Month trip capacity.	Utilisation	Revenue(Rs)	Use of PA bus/es Month trip capacity.	Utilisation	Revenue (Rs)	Use of month trip quantum	Guides utilisation	Revenue(Rs)
1	2	3	4	5	6	7	8	9	10	11

**Note :** Riding elephant : Month trip capacity e.g. 2 elephants, 4 trips/day, each to carry 4 people, therefore the elephant month trip capacity =  $2 \times 4 \times 4 \times 30 = 960$ .

Record utilisation accordingly.

Bus month trip capacity : e.g. one bus, 2 trips/day, 20 seater =  $1 \times 2 \times 20 \times 30 = 1200$ .

Guide-month trip quantum : 1 guide, 4 trips/day =  $1 \times 4 \times 30 = 120$  trip quantum/guide

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**FORM WM - 8.3**  
**ECO-TOURISM - PARTNERS**  
**YEAR**

Sr. No.	Identity of eco-tourism entrepreneur	Infrastructure	Programmes	Investment	Kind and extent of & benefits to local people	Benefit to PA resources
1	2	3	4	5	6	7

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**FORM WM - 8.4 (A) & (B)**  
**ECO-TOURISM : VISITOR ASPIRATIONS**  
**YEAR**

Visitor category	Number	Interested in									
		Plants	Bird watching	Animal sighting	Photography	Sketching	Scenic place	Cultural/historical sites	Pilgrimage	Trekking	Other
Adults Male Female Children Foreigners Male Female Children											
1	2	3	4	5	6	7	8	9	10	11	12

**Note** : 8.4 (A) is for urban population  
 8.4 (B) is for rural population  
 Create separate forms 8.4 (A) & 8.4 (B) that are otherwise identical  
 fire has been mapped.  
 305

**FORM WM - 9**  
**OUTBREAK OF FIRES**  
**YEAR**

Sr. No.	Range	Location	Extent (ha)	Dates		Reasons	Estimated loss	Remarks
				Detected	Controlled			
1	2	3	4	5	6	7	8	

**Note** : Location : By compartments  
 Reasons : Established or suspected  
 Estimated loss : e.g. number of trees damaged, stacked firewood/timber/bamboo destroyed/damaged by volume and cost, wild animals dead, particulars of sensitive sites affected, other property or life destroyed.  
 Remarks : State particularly problems encountered in detection and suppression and any other useful information. State also whether the extent of fire has been mapped.

**FORM WM - 10**  
**OFFENCE CASES DETECTED**  
**YEAR**

Sr. No.	Range	Category	Numbers	Number of cases decided		Number of cases under process	Number of cases compounded	Remarks	
				Successful	Failure				
1	2	3	4	5	6	7	8	9	10

**Note** : Category : e.g. illegal cutting of trees, illegal firewood, illegal NWP, poaching, encroachment, illegal cattle grazing etc. category should be codified by letters of alphabet.

Remarks : Any other useful information. This should also include the number of cases pending decision with the department.

\* : The cases under column 8 pertain to area of non PA status under management which do not involve an endangered species (Schedule-I).  
 fire has been mapped.

**FORM WM - 11**  
**INCENTIVES AND REWARDS/AWARDS**  
**YEAR**

Sr. No	Range	Number of recipients incentives/reward for detecting offences	No. of recipients award for outstanding service	Kind of award	Number of recipients	Remarks
1	2	3	4	5	6	7

**Note** : Kind of award : e.g. a medal like the Shaurya Chakra, any other such awards instituted by the State or Central Government. Includes citations, extra increments etc.

Remarks : Any other useful information. If an award carries cash, mention the

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**FORM WM - 12**  
**RESEARCH PROJECTS UNDER IMPLEMENTATION THROUGH PA MANPOWER WITH OR**  
**WITHOUT**  
**COLLABORATION WITH OTHER AGENCIES**  
**YEAR**

Sr. No.	Title	Completed	Ongoing	New	Status	Financial outlay (Rs)	Expenditure incurred (Rs)	Remarks
1	2	3	4	5	6	7	8	9

**Note :** Completed : State date of completion and the status of the project report.  
Ongoing : State since when the project is under operation and expected period of completion.  
New : State the date of commencement and duration.  
Status : State the progress towards achievement of objectives; or project which has been dropped or held in abeyance etc.  
Remarks : Any other relevant information. If the project is in collaboration with any other agency or is an contractual arrangement, state the situation and the name of the collaborating agency. If animal/plant specimen are being collected, state authority and where the collections are being housed.

**FORM WM - 12.1**  
**RESEARCH PROJECTS UNDER IMPLEMENTATION BY OTHER AGENCIES**  
**YEAR**

Sr. No.	Title	Completed	Ongoing	New	Status	Financial outlay (Rs)	Expenditure incurred (Rs)	Remarks
1	2	3	4	5	6	7	8	9

**Note :** Completed : State date of completion and the status of the project report.  
Ongoing : State since when the project is under operation and expected period of completion.  
New : State the date of commencement and duration.  
Status : State the progress towards achievement of objectives, or project which has been dropped or held in abeyance etc.  
Remarks : Any other relevant information. State the name of the agency. If animal/plant species are being collected, state authority and where the collections are being housed.



**FORM WM - 13**  
**SURVEY AND INVENTORIES**  
**YEAR**

Sr. No.	Title of survey, inventory activity	Completed	Ongoing	New	By PA	By other agency	Remarks
1	2	3	4	5	6	7	8

**Note :** Completed : State date of completion of field work and the status of the report.  
Ongoing : State since when is it under operation and when is it expected to be completed.  
New : State the date of commencement and duration.  
By PA personnel : Will include collaboration or contractual arrangement. State the case as relevant.  
Other agency : State the name of the agency.  
Remarks : If specimen of plants/animals are being collected, state where the collection is being housed and authority. Any other useful information.

**FORM WM - 14**  
**THE MONITORING PROGRAMME**  
**YEAR**

Sr. No.	Title of the programme	Date of initiation	Responsible agency	Technique	Status of collaboration and analysis of data	Remarks
1	2	3	4	5	6	7

**Note :** Technique : e.g. PCQ, belt transect, line transect and plots, pugmarks etc. by the title of the technique.  
Status of : Write only if applicable.  
collaboration

**FORM WM - 15**  
**ECODEVELOPMENT PROGRAMME : TARGETS AND IMPLEMENTATION**  
**YEAR**

Sr. No.	Nature of the programme	Sector (Central/State) or NGO sponsored	Target set		Achievements		Village(Buffer/enclaved)	Remarks
			Physical	Financial	Physical	Financial		
1	2	3	4	5	6	7	8	9

**Note :** Nature of the programme : e.g. pasture development, fodder plantations, establishing biogas units, livestock improvement, establishment and development of sericulture, revival of local skills such as handicraft, water harvesting systems, adults education etc.  
Village : Site where programme is being implemented - whether buffer or inside PA.  
Remarks : State problems, state failures and reasons thereof, reasons for not attaining targets, for non-implementation or deviation etc. State whether it is on the right tracks in context of achievement of objectives.

**FORM WM - 16**  
**PROGRESS OF ALL STRATEGIES UNDER THE ZONE AND THEME PLANS**  
**YEAR**

Sr. No.	Zone/Theme	Nature of strategy	Target as per the schedule of operations/APO*		Achievement		Location	Remarks
			Physical	Financial	Physical	Financial		
1	2	3	4	5	6	7	8	9

**Note :** Zone/Theme plan : Mention title.  
Nature of strategy : e.g. demarcation of boundary, creation of artificial water source, salt lick, maintenance of water sources (desilting), cutting and burning of fireline, prescribed burning, weed control, immunization of cattle, maintenance of nature trails, setting up wayside exhibits, recruitment of staff, number of villages translocated, settled on new sites etc.  
Location : Where pertinent, mention location e.g. weed control in comptt. 105, 111, 117.  
Remarks : State problems, failures and reasons thereof, shortfall and reason, deviations if any and reasons, non-implementation with reasons etc.  
\*APO : (Annual Plan of Operations). Under Col.4 & 5, each column will have two figures. First the figure as per the schedule of operations in the plan and next to it in the same column the figure as per APO. If they differ it amounts to a deviation.

**FORM WM - 17**  
**PROGRESS OF LEGAL SETTLEMENTS UNDER THE WILDLIFE (PROTECTION) ACT 1972**  
**IN CONTEXT OF**  
**ATTAINMENT OF THE STATUS OF A WLS/NP**  
**YEAR**

Sr. No.	Nature of settlement/ enquiry & section under the Act	Progress achieved till the commencement of the year under report	Progress achieved during the year	Remarks
1	2	3	4	5

**Note :** Remarks :State the problems encountered and any other useful information such as reasons for inadequate/lack of progress

**FORM WM - 18**  
**A SUMMARY OF ALLOTMENT OF FUNDS, REVENUE AND EXPENDITURE**  
**YEAR**

Sr. No.	Plan/non-plan/ any other grant	Sector Central/State/other	.Allotment received		Expenditure Incurred		Revenue realised	Remarks
			Non-recurrent	Recurrent	Non-recurrent	Recurrent		
1	2	3	4	5	6	7	8	9

**Note :** Explain under expenditure, over expenditure, savings and surrenders. State the extent of demand for the year as per the schedule of operations/APO in the remarks column.

**FORM LS - 1**  
**EXISTING CORRIDORS - CONSERVATION INPUTS REQUIRED**

Sr. No.	Identity of the corridor	Length/Section	Nature of inputs/treatment	Target	Agency/cies identified	Constraints	Anticipated investment
1	2	3	4	5	6	7	8

**Note** : Col 2 : by name, number, etc.

Col 3 : Total length, if only a particular section is relevant, mention the section

**FORM LS - 2**  
**EXISTING CORRIDORS - CONSERVATION INPUTS ACCOMPLISHED**

Sr. No.	Identity of the corridor	Length/section addressed	Nature of inputs/treatment	Agency	Target set	Achievement	Constraints	Investment	Remarks
1	2	3	4	5	6	7	8	9	10

**Note** :Col. 10 State success and quality of achievement. Anything else that is significant

**FORM LS - 3**  
**EXISTING CORRIDORS - MONITORING HABITAT RECOVERY**

Sr. No.	Identity of the corridor	Length /section monitored	Inputs/treatment that had been provided	Monitoring technique/process	Indicators of recovery	Nature of progress	Constraints	Remarks
1	2	3	4	5	6	7	8	9

**Note :** Col 9 : Indicate the quality and measure of success

**FORM LS - 4**  
**POTENTIAL CORRIDORS - CONSERVATION INPUTS REQUIRED**

Sr. No.	Identity of the corridor	Length/Section	Nature of inputs/ treatment	Target	Agency/cies identified	Constraints	Anticipated investment
1	2	3	4	5	6	7	8

**Note :** See form LS-1

**FORM LS - 5**  
**POTENTIAL CORRIDORS - CONSERVATION INPUTS ACCOMPLISHED**  
**YEAR**

Sr. No.	Identity of the corridor	Length/section addressed	Nature of inputs/treatment	Agency	Target set	Achievement	Constraints	Investment	Remarks
1	2	3	4	5	6	7	8	9	10

**Note :** See form LS-2

**FORM LS - 6**  
**POTENTIAL CORRIDORS - MONITORING HABITAT RECOVERY**  
**YEAR**

Sr. No.	Identity of the corridor	Length /section monitored	Inputs/treatment that had been provided	Monitoring technique/process	Indicators of recovery	Nature of progress	Constraints	Remarks
1	2	3	4	5	6	7	8	9

**Note :** See form LS-3

**FORM LS - 7**  
**CONNECTING MULTI-AGENCY PROGRAMS IN LANDSCAPE BASED PLANNING**  
**PARTNERS DURING YEAR :**

Sr. No.	District	Sector Central/ State/Other (specify)	Agency & Work area/speciality	Program coverage	Agreed input and mechanism	Financial implications /investment & source
1	2	3	4	5	6	7

**Note :** Col 4 : Main agency agenda e.g. livestock production, health, education, irrigation etc.  
Col. 5 : Indicate by either administrative unit e.g. tehsil, or number of villages i.e. target  
Col. 6 : what has the agency agreed on to deliver ? How ? through agency plan/ scheme ?

**FORM LS - 8**  
**MONITORING EXTENT AND QUALITY OF MULTI-AGENCY PROGRAMS**  
**YEAR**

Sr. No.	District	Sector/Central/State/ Other (Specify)	Agency	Objectives & targets	Achievement & standard	Constraints	Extent of investment	Remarks
1	2	3	4	5	6	7	8	9

**Note :** Col 6. The standard of achievement to be based on (i) verification of targets (ii) perception of satisfaction of people and their own assessment  
Col. 7 (i) as reported by agency(ii) as perceived by people concerned

## APPENDIX-1

### CONSTITUTION OF SATKOSIA GORGE SANCTUARY AND EXTENT OF R.F.s/ D.P.F.s /P.R.F

This sanctuary has been constituted by amalgamation of deferent forests and area of following territorial divisions with area in sq. km.

#### ABSTRACT OF AREA STATISTICS.

Name of the Division	Area in Sq.Kms.
1.Angul	417.499
2.Nayagarh	112.530
3.Boudh	68.610
4.Athagarh	13.750
5.Athamallik	14.209
6.Building etc	0178
7.Mahanadi River	30.100
8.Village area	138.644
<b>Grand Total of Sanctuary</b>	<b>795.52</b>

This Sanctuary is managed by two wildlife divisions. The northern part of the river Mahanadi including the river is managed by Satkosia Wildlife Division and the southern part of the Sanctuary is managed by Mahanadi Wildlife Division. The names of the R.Fs, P.F.s with their area in each division are as follow:-

Name of the Division	Name of District	Name of R.F/P.R.F./D.P.F. Forest Block	Compart ment No.	Area Covered (Sq. Km)
1	2	3	4	5
Satkosaia WL Division	Angul	Katrang R.F.	1 to 11	44.658
		Tikarpada R.F	1to 9	27.604
		Purunakote R.F	1 to 20	63.800
		Tulka R.F	1 to 12	40.769
		Raigoda R.F	1 to 16	42.926
		Balong R.F	11 & 12	7.099
		Jacob R.F.	1 to 6	15.147
		Takarsinga R.F.	1 to 4	15.435
		Chhotamunda R.F.	1 to	14.981
		Kuru R.F.	1 to 9	21.169
		Baghamunda R.F.	1 to 13	38.126
		Tainsi R.F.	1 to 10	22.598
Majhipada R.F.+	1 to 17	48.908		



		Katrnang D.P.F.	3.237
		Tikarpara P.R.F.	2.808
		Majhipada P.R.F.	6.956
		Purunakote D.P.F.	1.278
		Hatidhara R.F.	
		Compt. No 23 to 27	13.979
		P.F. adjoining to	
		Hatidhara R.F.	0.230
		<b>Total R.F./P.F. area covered under Angul district</b>	<b>431.708</b>
	Cuttack	Jorum B class R.F. Block -I	10.120
		And II	
		Satyajaypur P.F.	3.630
		<b>Total P.F./R.F. area covered under Cuttack district</b>	<b>13.750</b>
Mahanadi WI Division	Boudh	Padmatola R.F. Compt.No.1 to 11	46.740
		Arakhpadar.R.F.Compt.No1&2	10.010
		Nandagaru P.R.F.	11.860
		<b>Total R.F./P.R.F. area covered under Boudh District</b>	<b>68.610</b>
	Nayagarh	Mahanadi R.F.	102.837
		Compt.No.1 to 17	0.736
		Mahanadi P.R.F	2.010
		Phasi P.R.F	3.143
		Phasi D.P.F.(II toVII)	3.804
		Chamundia-I-PRF	
		<b>Total R.F./P.R.F./D.P.F. area Covered under Nayagarh District</b>	<b>112.530</b>

Total Forest Area	626.598
Total Village Area	138.644
Total Building Area	0.178
Total River Area (Mahanadi)	30.100
Total Forest and Non-Forest area covered under Satkosia Gorge Sanctuary	795.520

## APPENDIX -2

### Informations about Reserved Forest Notifications

1. Notification No.1597 for dt.20.3.1894 which cancels the Notification No.2351 dated 11.6.1893 and modify the Notification dt.6.12.1883 and dated 18.4.1885 covers the Notification of the following reserved forests:

1. Nuakheta R.F.
2. Bolang R.F.
3. Raigoda R.F.
4. Takarsingha R.F.
5. Jocobo R.F.
6. Chhotmunda R.F.
7. Tulka R.F.
8. Purunakot R.F.
9. Katrang R.F.
10. Tikarpara R.F.
11. Baghamunda R.F.
12. Majhipara R.F.
13. Tainsi R.F.
14. Antulia-Tabada R.F.
15. Katada R.F.
16. Durgapur R.F.
17. Simlipathar R.F.
18. Kanloi R.F.

This Notification is reproduced below:

**REVENUE DEPARTMENT – (FORESTS).**  
**NOTIFICATION No.1597 For.**  
**The 20<sup>th</sup> March 1894**

1. Notification No.2351 (Forests), dated the 11<sup>th</sup> June 1893 is hereby cancelled.
2. In exercise of the power conferred by section 26 of the Indian Forest Act(VII of 1878), and with the previous sanction of the Governor-General in Council, the Lieutenant-Governor is pleased to direct that, from the date of this notification, the forests in the mahal of Angul in Orissa, within the boundaries described ins schedule A hereto annexed, which were declared by the notifications dated respectively the 6<sup>th</sup> December 1883 and the 18<sup>th</sup> April 1885 to be reserved forests, shall cause to be reserved forests:-

## SCHEDULE A.

Tikarpara :- (a. Areas between the boundaries notified in the notification of 6<sup>th</sup> December 1883 and the following demarcated line:-

**In the north of the reserve :-** From a point on the boundary between Hindole and Angul, south-east of Kanja, along a new demarcated line (which for some four hundred yards runs about half a mile from the foot of the hills, and then across the hills) south of Kanja, Nuagan, Barakantakul and Nuakheta villages to a point at the foot of the hills west of Nukhripada, thence along old demarcated boundary line or reserve forest for three quarters of a mile to old trijunction pillar of reserved forest and Ragariapara and Bhubanpur jungle mauzas, thence along a new demarcated line (passing across the hills) south of Kanta Megh to a point on the old demarcated boundary line of reserved forest to a point about a quarter of a mile south of Bhagpal village, thence along a new demarcated line running south-west and then west across the hills to old trijunction pillar of reserved forest and Hidisinga and Dimiripal mauzas, thence West along, old demarcated boundary of reserved forest to a point half a mile to the south-west of Pompasora village, thence along a new demarcated line (running across the hills) to a point on the Angul-Tikarpara road, some two miles south of Hinsrida village, thence along a new demarcated line running across the hills to old trijunction pillar of reserved forest and Hinsrida and Jaganathpur jungle mauzas; thence along Angul-Tikarpara road to old trijunction pillar of reserved forest and Jaganathpur and Takasingha mauzas.

**In the West of the reserve :-** From above point along a new demarcated line (running across the hills) off the villages of Takasingha, Nuabhuin and Kulangi, to a point on the junction line of the Bagmunda and Tikarpara reserved forests, thence along the old demarcated boundary line between the Bagmunda and Tikarpara reserved forests for nearly a mile, thence the last-named line for about a quarter of a mile, thence along a new demarcated line to a point situated on the Angul-Tikarpara road, about a quarter of a mile south of Bodakheta village, thence along that road itself for about half a mile to a point north of Gopalpur village, thence along a new demarcated line (running across the hills) to the east of Gopalpur and Purnakat villages to a point on a stream to the south-east of that village, thence down the above stream for about two hundred feet, thence along a new demarcated line (running across the hills) to the south of the above two villages to a point on the Angul-Tikarpara road, thence the above road for about a mile and a half to a point north of Hatibari, thence along a new demarcated line (running across the hills) to the north and east of Hatibari village and to east of Molia village, and joining the Mahanadi river at the old trijunction pillar of the reserved forest and Tikarpara mauza.

**In the south of the reserve :-** The Mahanadi river to the boundary of Daspalla.

**In the east of the reserve :-** The boundary between Angul and Daspalla, Narsinghpur and Hindole, to the starting point.

(b) Areas between the existing village boundaries of Chhotkai, Chota Katarang, Taluka, Bolong, Jokabo, Talisara, Labangi, Kotarangi, Raigoda, Narmi and a demarcated line distant not less than 500 yards from the limits of permanent cultivation.

**Bagmunda(a):-** Areas between the boundaries notified in the notification of 6<sup>th</sup> December 1883 and the following demarcated line:-

**In the north of the reserve :-** From a point on the boundary between Angul and Athmalik along a new demarcated line (running across the hills) west of Kotiabhuin and Daleki villages to a point on a stream, thence down the above stream for a quarter of a mile, thence along a new demarcated line (running across the hills) south of Dalasinga village to trijunction pillar of Dalasinga and Thakuli mauzas, thence along a new demarcated line (passing round three sides of Baghmunda village and running across the hills) to the old trijunction pillar of the village of Kunuri and the reserved forest, thence along old demarcated boundary line of reserved forest to a point situated about half a mile south east of the village of Ullaberi; thence along a new demarcated line (running across the hills) south and east of the villages of Nuapara and Hinjadola to the trijunction pillar of Hinjadola and Tabada village.

**In the east of the reserve :-** From the above trijunction pillar along old demarcated boundary line of reserved forest to a point where the footpath from Nuapara crosses the stream west of Jaganathpur, thence along a new demarcated line (running across the hills) south to the Angul-Tikarpara road, thence along a new demarcated line (running across the hills) in a south-easterly direction to a point on the stream flowing south west of Kulangi village, where it meets the new demarcated boundary line of the Tikarpara reserved forest.

**In the south of the reserve :-** From the above point along western boundary of the Tikarpara reserved forest to a point on the Angul-Tikarpara road about half a mile to the north of the village of Gopalpur, whence the boundary of the Tikarpara reserved forest branches off from the road in the form of a demarcated line eastwards, thence along the old demarcated boundary line of the reserved forest as far as its junction with the Purunakot-Bagmunda road, thence south along a new demarcated line to a point on the Angul-Tikarpara road, thence along the old demarcated boundary line of the reserved forest following the base of the hills to point about half a mile north-east of the village of Majhipara, thence a new demarcated line (running across the hills) to the Mahanadi river, thence the Mahanadi river to the boundary between Angul and Athmalik.

**In the west of the reserve :-** The boundary between Angul and Athmalik.

(b) Areas between the existing village boundaries of Salor, Bodokheta, Tarwa and a demarcated line distant not less than 500 yards from the limits of permanent cultivation.

**Simulipathar:-** (a) Areas between the boundaries notified in the notification of 6<sup>th</sup> December 1883 and the following demarcated line:-

**In the north of the reserve :-** From a point of the Angul-Athmalik boundary along old demarcated boundary line of the reserved forest in an easterly direction to a point at the foot of the Kisinda hill; thence a new demarcated line south to a point on the Japijhoran stream; thence down the above stream to junction with old demarcated line of reserved forest; thence along the latter to a point on the road leading from Durgapur to Naopada.

**In the east of the reserve :-** From above point about eight chains along the road from Naopada to Durgapur; thence a new demarcated line (running across the hills) in the direction of Bakla village and descending again to the trijunction pillar of Durgapur and Dahurisal mauzas.

**In the south of the reserve :-** From above point along the old demarcated boundary line of the reserved forest to a point north of Katara village; thence a new demarcated line (running across the hills) north of the villages of Katra and Kandkurara to the junction of the Athmalik boundary with the Sambalpur road.

**In the west of the reserve :-** Boundary between Angul and Athmalik.

(b) Areas between the existing village boundaries of Simulipathar, Sugolasar and a demarcated line distant not less than 500 yards from the limits of permanent cultivation.

**Katara :-** (a) Areas between the boundaries notified in the notification of 6<sup>th</sup> December 1883 and the following demarcated line.

**In the north of the reserve :-** From a point near Chhatabor on the Angul-Athmalik boundary along the old demarcated boundary line of the reserved forest to a point west of Sauria village; thence along a new demarcated line (running over the Dantoria hill) to a point on the old demarcated boundary line of the reserved forest near Para-Kumarsinga village.

**In the east of the reserve :-** From above point along the old demarcated boundary line of the reserved forest up to the base of the Thekibari hill; thence along a new demarcated line (running across the hills) west of Para village to a point on the road leading from Para to Roadasinga.

**In the south of the reserve :-** From above point along the old demarcated boundary line of the reserved forest to its junction with the Angul-Athmalik boundary.

**In the west of the reserve :-** Boundary between Angul and Athmalik.

**Antulia /Tabada** (a) Areas between the boundaries in the notification of 6<sup>th</sup> December 1883 and the following demarcated line:-

**In the north of the reserve :-** From a point on the Angul – Athmalik boundary along a new demarcated line south of Roadasinga village to the junction of the latter with the old demarcated boundary line of the reserved forest; thence the old boundary line to the trijunction pillar of Para and Roadasinga jungle mauzas.

**In the east of the reserve :-** From above point along the old demarcated boundary line of the reserved forest to the trijunction pillar of Sitakulai and Tabada jungle mauzas.

**In the south of the reserve :-** From above point along the old demarcated boundary line of the reserved forest to the trijunction pillar of Himjaloi and Lakhanpur mauzas.

**In the west of the reserve :-** From above point along the old demarcated boundary line of the reserved forest to the point where it meets the road from Antulia to Uji; thence along a new demarcated line (running across the hills) encircling three sides of the village of Tabada to a point on the same road, thence west along a continuation of the same new demarcated line to the Athmalik boundary; thence along the Athmalik boundary to the starting point.

**Kanloi :-** a) Areas between the boundaries notified in the notification of 6<sup>th</sup> December 1883 and the following demarcated line.

**In the north land east of the reserve :-** From a point on the Angul – Rerhakhol boundary some two mile south-west of the village of Kanloi along a new demarcated line, which after running east for some three chains, here joins the old demarcated boundary line of the reserved forest, thence along the latter to a point south of Kanloi village; thence along a new demarcated line (running across the till) of about three quarters of a mile, excluding the spring and village deities from the reserve and joining the old demarcated boundary line of the reserved forest again to the south-east of Kanloi village; thence along the latter to its junction with the Madhuria river; thence along the Maduria river to the Athmalik boundary.

**In the south of the reserve :-** Boundary between Angul and Athmalik.

**In the west of the reserve :-** Boundary between Angul and Rerhakhol.

**Durgapur :-** (a) Areas between the boundaries notified in the notification of 18<sup>th</sup> April 1885 and the following demarcated line.

**In the north of the reserve :-** From a point situated on the road leading from Durgapur of Kumuri along the old demarcated boundary line of the reserved forest to

trijunction on pillar of Gopbulabpur and Nuimchor mauzas; thence east along new demarcated line of 30 chains to a point on the old demarcted boundary line of the reserved forest north of Raijharan village; thence south and east along the old demarcated boundary line of the reserved forest to the trijunction pillar of Kankarai and Raijharan mauzas.

**In the east of the reserve :-** From above point along the old demarcated boundary line of the reserved forest to trijunction pillar of Lakhmiballabhpur and Bara-Kerjang jungle mauzas.

**In the south of the reserve :-** From above point along the old demarcated boundary line of the reserved forest to the trijunction pillar of Jarpara jungle mauza and Durgapur Tangrisai on the road near Kusumghati.

**In the west of the reserve :-** From above point along the old demarcated boundary line of the reserved forest round three sides of the village of Durgapur-Tangrisai to a point situated on the Mondapada; thence a new demarcated line running north-west for about half a mile to the top of Mantopogria hill; thence the same line continued west for some 20 chains and then south-west for half a mile to the Dandaragria hill; thence the same new demarcated line running north-west over the hills to the starting point.

3. The notifications referred to above are hereby republished for general information with such amendments in the descriptions of boundaries appended thereto as are necessitated by section 2 of this notification.

## NOTIFICATION

**The 6<sup>th</sup> December 1883 :-** In exercise of the powers conferred upon him by section 19 of the Indian Forest Act, VII of 1878, the Lieutenant-Governor hereby declares the land described below (which on the 4<sup>th</sup> July 1882 were notified as proposed reserves) to be reserved forests with effect from the 1<sup>st</sup> January 1884 :-

Dist.	Pargana or Sub-division	Name of forest	Boundaries	Remarks
1	2	3	4	5
ANGUL	ANGUL	Tikarpara	North:-From a poing on the boundary between Hindole and Angul, south east of Kanja, along a new demarcated line (which for some four hundred yards runs about half a mile from the foot of the hills, and then across the hills) south of Kanja, Nuagan, Barakantakul and Nuakheta villages to a point at the foot of the hills west of Nukhripada, thence along old demarcated boundary line of	The following interior villages and hamlets with cultivation and waste lands attached thereto, have been excluded from the reserved forst and separated therefrom by a demarcated line on all sides, distant not less than 500 yards, from the

		<p>reserved forest for three quarters of a mile to old trijunction pillar of reserved forest and Ragariapara and Bhubanpur jungle mauza, thence along a new demarcated line (passing across the hills) south of Kanta Megh to a point on the old demarcated boundary line of reserved forest west of Ragariapara village, thence along old demarcated boundary line of reserved forest to a point about a quarter of a mile South of Bhagpal village, thence along a new demarcated line running south-west and then west across the hills to old trijunction pillar of reserved forest and Hidisinga and Dimiripal mauza, thence west along old demarcated boundary of reserved forest to a point half a mile to the south west of Rampasaro village, thence along a new demarcated line running across the hills to a point on the Angul-Tikarpara road some two miles south of Hinsrida village, thence along a new demarcated line running across the hills to old trijunction pillar of reserved forest and Hinsrida and Jaganathpur jungle mauzas, thence along Angul-Tikarpara road to old trijunction pillar of reserved forest and Jaganathpur and Takasingha mauzas.</p>	<p>limits of permanent cultivation.</p> <p>Chhotkai.</p> <p>Chota-Katarang.</p> <p>Taluka</p> <p>Bolong.</p> <p>Jokabo.</p> <p>Jalisara.</p> <p>Labangi.</p> <p>Kaarangi.</p> <p>Raigada.</p> <p>Narmi.</p>
		<p>West:- From above point along a new demarcated line (running across the hills) of the villages of Takasingha, Nuabhuin, and Kulangi, to a point on the junction line of the Bagmunda and Tikarpara reserved forests, thence along the old demarcated boundary line between the Bagmunda and Tikarpara reserved forests, thence along the old demarcated boundary line between the Bagmunda and Tikarpara reserved forests for nearly a mile, thence the last named line for about a quarter, of a mile, thence along a new demarcated line to a point situated on the Angul-Tikarpara road, about a quarter of a mile, south of Bodakheta village, thence along that road itself for about half a mile to</p>	



			a point north of Gopalpur village, thence along a new demarcated line (running across the hills) to the east of Gopalpur and Purnakot villages to a point on a stream to the south east of that village, thence down the above stream for about two hundred, feet thence along a new demarcated line (running across the hills) to the south of the above two villages to a point on the Angul-Tikarpara road, thence the above road for about a mile and a half to a point north of Hatibari, thence along a new demarcated line (running across the hills) to the north and east of Hatibari village, and to east of Molla village, and joining the Mahanadi river at the old trijunction pillar of the reserved forest and Tikarpara mauza.	
			South:- The Mahanadi river to the boundary of Daspalla.	
			East:- The boundary between Angul and Daspalla, Narsinghpur and Hindole to the starting point.	
		Baghmunda	North:- From a point on the boundary between Angul and Athmalik along a new demarcated line running across the hills) west of Kotlabhuin and Daleki villages to a point on a stream, thence down the above stream for a quarter of a mile, thence along a new demarcated line (running across the hills) south of Dalasinga village to trijunction pillar of Dalasinga and Thakuli mauzas, thence along a new demarcated line (passing round three sides of Bagmunda village and running across the hills ) to the old trijunction pillar of the village of Kunuri and the reserved forest, thence along old demarcated boundary line of reserved forest to a point situated about half a mile south-east of the village of Ullaberi, thence along a new demarcated line (running across the hills) south and east of the villages of Nuapara and Hinjadola to the trijunction pillar of Hinjaldola and Tabada villages.	The following interior villages and hamlets, with cultivation and waste lands attached thereto, have been excluded from the reserved forest and separated therefrom by a demarcated line on all sides, distant not less than 500 yards, from the limits of permanent cultivation.  Salar.  Bodokheta.  Tarwa.

			East:-From the above trijunction pillar along old demarcated boundary of reserved forest to a point where the footpath from Nuapara crosses the stream west of Jaganathpur, thence along a new demarcated line (running across the hills) south to the Angul-Tikarpara road, thence along a new demarcated line (running across the hills) in a south-easterly direction to a point on the stream flowing southwest of Kulangi village, where it meets the new demarcated boundary line of the Tikarpara reserved forest.	
			South:- From the above point along western boundary of the Tikarpara reserved forest to a point on the Angul-Tikarpara road about half a mile to the north of the village of Gopalpur, whence the boundary of the Tikarpara reserved forest branches off from the road in the form of a demarcated line eastwards, thence along the old demarcated boundary line of the reserved forest as far as its junction with the Purnakot-Bagmunda road, thence south along a new demarcated line to a point on the Angul-Tikarpara road, thence along the old demarcated boundary line of the reserved forest (following the base of the hills ) to a point about half a mile north-east of the village of Majhipara, thence a new demarcated line (running across the hills) to the Mahanadi river, thence the Mahanadi river to the boundary between Angul and Athmalik.	
			West''- The boundary between Angul and Athmalik.	
ANGUL	ANGUL	Antulia Tabada	North:- From a point on the Angul-Athmalik boundary along a new demarcated line south of Roadasinga village to the junction of the latter with the old demarcated boundary line to the trijunction pillar of Para and Roadasinga jungle mauzas.	
			East:- From above point along the old demarcated boundary line of the	

			reserved forest to the trijunction pillar of Sitakulai and Tabada jungle mauzas.	
			South:- From above point along the old demarcated boundary line of the reserved forest to the trijunction pillar of Hinjaloi and Lakhanpur mauzas.	
			West:- From above point along the old demarcated boundary line of reserved forest to the point where it meets the road from Antulia to Uji, thence along a new demarcated line (running across the hills) encircling three sides of the village of Tabada to a point on the same road, thence west along a continuation of the same new demarcated line to the Athmalik boundary, thence along the Athmalik boundary to the starting point.	
ANGUL	ANGUL	Katara	North:- From a point near Chhatabar on the Angul-Athmalik boundary along the old demarcated boundary line of the reserved forest to a point west of Sauria village, thence along a new demarcated line (running over the Dantoria hill) to a point on the old demarcated boundary line of the reserved forest near Para – Kumar singa village.	
			East:- From above point along the old demarcated boundary line of the reserved forest up to the base of the Thekibari hill, thence along a new demarcated line running across the hills west of Para village to a point on the road leading from Para to Roadasinga.	
			South:- From above point along the old demarcated boundary line of the reserved forest to its junction with the Angul-Athmalik boundary.	
			West:- Boundary between Angul and Athmalik.	
ANGUL	ANGUL	Simulipathar	North:- From a point on the Angul-Athmalik boundary along old demarcated boundary line of the reserved forest in an easterly direction to a point at the foot of Kisinda hill, thence a new demarcated line south to a point on the Japijhoran stream, thence down the above stream to	The following interior villages and hamlets with the cultivation and waste lands attached thereto, have been excluded from the reserved forest and separated therefrom by a

			junction with old demarcated line of reserved forest, thence along the latter to a point on the road leading from Durgapur to Naopada.	demarcated line on all sides, distant not less than 500 yards, from the limits of permanent cultivation.  Simulpathar  Sudgolasar.
			East:- From above point eight chains along the road from Naopada to Durgapur thence a new demarcated line (running across the hills) in the direction of Bakla village and descending again to the trijunction pillar of Durgapur and Dahurisai mauzas.	
			South:- From above point along the old demarcated boundary line of the reserved forest to a point north of Kalara village, thence a new demarcated line (running across the hills) north of the villages of Katara and Kandkurara to the junction of the Athmalik boundary with the Sambalpur road.	
			West:- Boundary between Angul and Athmalik.	
		Kanloi	North and East:- From a point on the Angul-Rerhakhhol boundary some two miles south-west of the village of Kanloi along a new demarcated line which, after running east for some three chains, here joins the old demarcated boundary line of the reserved forest, thence along the latter to a point south of Kanloi village, thence along a new demarcated line (running across the hills) of about three quarters of a mile excluding the spring and village deities from the reserve, and joining the old demarcated boundary line of the reserved forest again to the south-east of Kanloi village, thence along the latter to its junction with the Madulia river, thence along the Madulia river to the Athmalik boundary.	
			South:- Boundary between Angul and Athmalik.	
			West:- Boundary between Angul and Rerhakhhol.	

## NOTIFICATION

The 18<sup>th</sup> April 1885:- In exercise of the powers conferred upon him by section 19 of the Indian Forest Act, VII of 1878, the Lieutenant-Governor hereby declares the lands described below ( which on the 4<sup>th</sup> July 1882 were notified as proposed reserves) to be reserved forests, with effect from the 1<sup>st</sup> May 1885:-

District	Pargana or Sub- division	Name of forest	Boundaries
1	2	3	4
Angul	Angul	Durgapur	North:- From a point situated on the road leading from Durgapur to Kurara along the old demarcated boundary line of the reserved forest to trijunction pillar of Gopibalabhpur and Nainichor mauzas, thence east along a new demarcated line of 30 chains to a point on the old demarcated boundary line of the reserved forest, north of Rairajharan village, thence south and east along the old demarcated boundary line of the reserved forest to the trijunction pillar of Kankarai and Raikharan mauzas.
			East:- From above point along the old demarcated boundary line of the reserved forest to the trijunction pillar of Lakhmibalabhpur and Bara-Kerjang jungle mauzas.
			South:- From above point along the old demarcated boundary line of the reserved forest to the trijunction pillar of Jarpara jungle mauza and Durgapur-Tangrisai on the road near Kusumghati.
			West:- From above point along the old demarcated boundary line of the reserved forest round three sides of the village of Durgapur-Tangrisai to a point situated on the Mondapada, thence a new demarcated line running north-west for about half a mile to the top of Montoprogria hill, thence the same line continued west for some 20 chains, and then south-west for half a mile to the Dandaragria hill, thence the same new demarcated line running north west over the hills to the starting point.
			<b>C.E.BUCKLAND,</b> <b>Secretary to the Govt. of Bengal.</b>

3. Kuru R.F. was notified later as Tarva forest vide Notification No.3523 For dated 23.7.1895. This notification is also reproduced below.

**REVENUE DEPARTMENT – (FORESTS).  
NOTIFICATION No.3502-For.**

The 20<sup>th</sup> July 1895:- Mr. E.E.Slane, Extra Assistant Conservator of Forests, is granted privilege leave for one day, under article 291 of the Civil Service Regulations, in extension of the leave granted to him in Notification No.1685-For, dated the 27<sup>th</sup> March 1894.

**C.E.BUCKLAND,  
Secretary to the Govt. of Bengal.**

**NOTIFICATION No.3523-For.**

The 23<sup>rd</sup> July 1895:- In exercise of the powers conferred upon him by section 19 of the Indian Forest Act, VII of 1878, the Lieutenant-Governor hereby declares the land described below (which in Notification No.4007-For, dated the 7<sup>th</sup> August, 1894, was notified as a proposed Reserved Forest) to be Reserved with effect from the 1<sup>st</sup> September 1895:-

<b>District</b>	<b>Pargana</b>	<b>Name of land</b>	<b>Boundaries</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
Angul	Tikerpara	Turva	North:- A demarcated line passing across the slope of Adimunda hill.
			East:- Angul-Tikerpara Road.
			West:- A demarcated line passing across Bichanda Bogra hill.
			South:- A demarcated line passing across the Goorandibindi hill.
			<b>C.E.BUCKLAND, Secretary to the Govt. of Bengal.</b>

**NOTIFICATION No.3549-For.**

The 23rd July 1895:- Mr. J.W.A.Grieve, Assistant Conservator of Forests, attached to the Darjeeling Forest Division, is granted three months Examination leave, under section 69 of the Forest Department Code with effect from the 15<sup>th</sup> July 1895, or from any subsequent date on which he may avail himself of it.

**C.E.BUCKLAND,**  
**Secretary to the Govt. of Bengal.**

**REVENUE DEPARTMENT,-(OPIUM).**  
**NOTIFICATION No.34150.**

The 17th July 1895:- Mr. W.S.Burt, Assistant Sub-Deputy Opium Agent in the Benares Opium Agency, is granted privilege leave for 21 days, with effect from the 5<sup>th</sup> September 1895, or any subsequent date on which he may avail himself of it.

**C.E.BUCKLAND,**  
**Secretary to the Govt. of Bengal.**

**NOTIFICATION No.463 T.R.-For.**

The 12<sup>th</sup> June 1899:- The Lieutenant-Governor is pleased under section 28 of the Indian Forest Act (VII of 1878, as amended by Act V of 1890), to declare “Protected Forest” in the meaning of the said Act, and from the date of this notification, all lands the property of Government in the Sadar sub-division of the district of Angul, excepting such lands as have been included in the reserved forest or have been settled with cultivators and others or may hereafter be so settled.

**F.A.SLACK,**  
**Offg. Secretary to the Govt. of Bengal.**

**REVENUE DEPARTMENT  
NOTIFICATION  
The 23<sup>rd</sup> April 1981.**

S.R.O. No.372/81- In exercise of the power conferred under section 21 of the Orissa Forest Act, 1972 (Orissa Act 14 of 1972) the State Govt. do hereby declare that the land situated in Angul Tahasil of the district of Dhenkanal, the limits of which are specified below, and the exact area of which is 156 acres shall be known as "Kandhakarada" reserved forest block.

**BOUNDARIES**

North – Similipathar reserved forests.  
East - Similipathar reserved forests.  
South – Village Kandhakarada (Jarpara P.S. No.10)  
West – Similipathar reserved forests.

(No. 27397-F.S. 173/81 R.)  
By order of the Governor  
D.NAYAK  
Deputy Secretary to Govt.

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**NOTIFICATION  
The 7<sup>th</sup> March 1983.**

S.R.O. No.166/83- In exercise of the power conferred under section 21 of the Orissa Forest Act, 1972 (Orissa Act 14 of 1972) the State Govt. do hereby declare that the land situated in Angul Tahasil of the district Dhenkanal, the limits of which are specified below and the area of which is 834.00 acres shall reserved forests with effect from 1<sup>st</sup> April, 1983 and shall be known as "Kumuri" Reserved Forests.

**BOUNDARIES**

North – Village Olabari and Naimunda.  
East - Tainsi reserved forests and Naimunda village.  
South – Kumuri Village and Tainsi R.F.  
West – Village Tentulei pahar and Naimunda.

(No. 16080-F.S. 67/82 R.)



By order of the Governor  
Md. SARWAR  
Deputy Secretary to Govt.  
**The 3<sup>rd</sup> January 1958**

No.227-12F-179(m)-57-D- In pursuance of Sub-Section(3) of Section 20-A of the Indian Forest Act-1927 (XVI of 1927). As amended subsequently in its application to the State of Orissa, the State Government do hereby certify that the documents mentioned in the schedule thereto annexed had been prepared under the authority of the Ruler of Athmallik State before the date of merger and have been under the authority of the State Government continued to be recognized maintained and acted upon thereafter.

**SCHEDULE**

- (I) Working Plan for the Reserved Forests of the Athmallik State for the years 1946-1961.

**DEVELOPMENT DEPARTMENT  
NOTIFICATION  
The 28<sup>th</sup> November 1959.**

No.41164-12f-139(M/2)/59-D.- In pursuance of sub section (3) of Section 20-A of the Indian Forest Act. 1927 (XVI of 1927), as amended subsequently in it's application to the State of Orissa by Orissa Act XI of 1954, the State government do hereby certify that the document mentioned in the schedule here to annexed had been prepared under the authority of the Ruler of Athgarh State before the date of merger and has been under the authority of the State Government continued to be recognized, maintained and acted upon thereafter.

**SCHEDULE**

- I. Register of Reserved and Protected Forests of Athgarh State.

**NOTIFICATION OF SANCTUARY**  
**GOVERNMENT OF ORISSA**

FOREST, FISHERIES & ANIMAL HUSBANDRY DEPARTMENT.  
NOTIFICATION.  
Bhubaneswar the 19<sup>th</sup> may, 1976

No.4F(W) 33/76. 12727/FFAH. In exercise of the powers conferred 18 of the powers conferred by section 18 of the Wildlife(Protection)Act.1972( 53 of 1972) , the State Government do hereby declare that the area, limits of which are in more detail mentioned in the schedule below, including the entire bed of river Mahanadi, contained between Kusumkhuri Nala under P.S. Athamallik in the Sub-division of Athamallik, in the district of Dhenkanal and Barjor Nala under P.S.Harbhanga in the sub-division of Boudh in the district of Phulbani at the northern ends and Orasinga nala (Suagi nala) under P.S.Narsinghpur in the Athagarh sub-division in the district of Cuttack and Brutanga nala under P.S.Gania in the sub-division of Nayagarh in the district of Puri at the southern ends to be a sanctuary to be known as Satkosia Gorge Sanctuary for the purpose of protecting, propagating and developing wildlife , with effect from the date issue of this notification.

**SCHEDULE**

**I Dhenkanal District**

(i) Angul Forest Division : The boundary line in the South-East follows the inter district boundary line between Dhenkanal and Cuttack districts upto village Bhurkundi and then runs along the boundary line of Raigada R.F. upto village Rasanda and then along the Ragada-Pampasar Forest Road till it meets Angul-Tikarpada P.W.D.road and follows the same upto Jagannathpur till it meets the Tainsi R.F. boundary line and follows the same in a north-westerly direction till it meets Baghmunda R.F. boundary line and follows the same in a north-westerly direction till it meets Chanagodi nala and follows the same till it meets the Majhipara R.F. boundary line and follows the same till it meets the River Mahyanadi and follows the inter district boundary between Dhenkanal and Pulbabni districts and Dhenkanan and Puri district till it meets the trijunction point of Cuttack, Dhenkanal and Puri districts.

(ii) Rairakhhol Forest Division : It starts from the junction of River Mahanadi and Kusumkhuri Nala ( Athamallik P.S.)AND FOLLOWS THE Nala till it meets the Athamallik-Daruha Road and follows the road till it meets the Chanagori nala and follows the nala in a north – easterly direction till it meets Majhipara R.F. boundary line of Angul Forest Division and follows the same till it meets the River Mahanadi and follows the same along the inter district boundary of Dhenkanal and Phulbani districts.

## II Cuttack District

**Athagarh Forest Division :** It starts from the junction of the River Mahanadi and Orasinga Nala ( known as Suagi nala in the upper reaches) under P.S. Narsinghpur in the Athagarh sub-division and follows the same till it meets the Tulka R.F. boundary line and then follows the inter district boundary line between Cuttack and Dhenkanal districts in a westerly direction till it meets the River Mahanadi and follows the inter district boundary between Cuttack and Puri districts.

## III Puri District

**Nayagarh Forest Division :** It starts from the junction of the River Mahanadi and Brutanga Nala in the P.S. of Nayagarh Sub-Division and follows the same in a south-westerly direction till it meets the boundary line of Mahanadi R.F. and follows the same till it meets the inter district boundary of Phulbani and Puri districts and follows the same in the North-Easterly direction till it meets the river Mahanadi and follows the inter district boundary between Dhenkanal , Puri and Cuttack districts.

## IV Phulbani District

**Phulbani Forest Division:** The boundary starts from the junction of the River Mahanadi and Barjore Nala in Harbhanga P.S. of Boudh Sub-Division and runs along the Nala till it meets the Hatidhara R.F. boundary line and follows the same in a North-Easterly direction till it meets the river Mahanadi and follows the same along the inter district boundary line of Phulbani and Dhenkanal districts.

By order of Governor

D.N.Padhi

DEPUTY SECRETARY TO GOVERNMENT

**N.B. : The above notification published in the Orissa Gezette vide SRO No.567/76 on dtd. 4.6.1976.**

Memo No. 12728/FFAH , Dated Bhubaneswar the 19<sup>th</sup> May, 1976.

Copy forwarded to Director, Printing, Stationary and Publications, Orissa for favour of publication in the next issue of the Orissa Gazette.This is statutory.

Sd/-

Deputy Secretary to Government.

Memo No. 12729/FFAH , Dated Bhubaneswar the 19<sup>th</sup> May, 1976.

Copy forwarded to Private Secretary to Chief Secretary/All Deptts.of Govt./All Heads of Deptts./ Collector, Dhenkanal/ Collector, Phulbani / Collector,Cuttack / Collector,Puri / D.F.O.Angul / D.F.O., Rairakhol / D.F.O., Athagarh / D.F.O., Nayagarh / D.F.O.,Phulbani , / C.F.,Development Circle/C.F. Angul for information .

Sd/-

Deputy Secretary to Government.

**NOTIFICATION OF REORGANIZATION OF WILDLIFE  
DIVISIONS  
GOVERNMENT OF ORISSA  
FOREST, FISHERIES AND ANIMAL HUSBANDRY DEPARTMENT,  
RESOLUTION.**

No.13060/F&E 8F(WL)-7/99,Dated Bhubaneswar the 12<sup>th</sup> July, 1999

After careful consideration of all aspects of management of Satkosia & Baisipalli wildlife sanctuaries and the approved policy of Govt., of India to keep the management of sanctuaries under the direct administrative control of the Chief Wildlife Warden, it has been decided by the Government to transfer the control of the parts of the above sanctuary located in Angul, Athagarh, Athamallik Forest Divisions to the administrative control of the Divisional Forest Officer, Satkosia Wildlife Division, Angul and the rest of the portions of the sanctuary located in Nayagarh and Boudh Forest Divisions to the control of the Deputy Director, Social Forestry Project Division, Phulbani to be designated henceforth as Divisional Forest Officer, Mahanadi Wildlife Division, in the interest of public service.

The area inclusive of river Mahanadi and area to the north of the river being part of Satkosia Wildlife Sanctuary constituted in the Notification No. 12727/FFAH Dt.19.05.1976 shall be under the control of Satkosia Wildlife Division with headquarters at Angul while the balance portions of Satkosia Wildlife Sanctuary lying on the south of river Mahanadi presently in Nayagarh & Boudh Territorial Divisions and the entire Baisipalli Wildlife Sanctuary constituted in Notification.

In addition to the sanctuary, the staff, building, roads, equipments and furniture's etc. available within the areas of the concerned territorial Divisions shall be transferred to the concerned Wildlife Division from the date of this Resolution.

The Office buildings, staff with all assets including vehicles, equipments, furniture etc. of the Deputy Director, Social Forestry Project Division shall be transferred to the newly created Mahanadi Wildlife Division and the headquarters of the Division will continue at Phulbani. Two ranges namely the Purunakatak Social Forestry Range and Balliguda Social Forestry Project Range with staff, vehicles equipments and other assets shall be transferred to the control of this newly created Wildlife Division and its headquarters shall be located at Daspalla and Ganja respectively. The other ranges of Phulbani Social Forestry Project Division shall be transferred to Phulbani (T) and Boudh (TY0 Divisions and shall be Territorial Rangers. They shall also take charge of the files, assets and liabilities of Purunakatak and Balliguda S.F.P. Ranges.

All transfer of staff and assets as mentioned above shall be on as is where is basis as per Annexure-I,II,III. The budgetary provision in respect of establishment and other expenditure and the various wildlife schemes to be implemented in these two divisions will be streamlined in the 1<sup>st</sup>. Supplementary Budget for 1999-2000. However non-plan budget, which is

controlled by the Principal Chief Conservator of Forests, Orissa shall be provided for the transferred posts.

Consequent upon the said transfer of the areas, the Divisional Forest Officer, Satkosia Wildlife Division, Angul and the Divisional Forest Officer, Mahanadi Wildlife Division, Phulbani shall exercise all the powers of Divisional Forest Officers vested under the Orissa Forest Act, 1972 and of Wildlife Warden as appointed under Section 4(i) (b) of the Wildlife (Protection) Act, 1972 within the jurisdiction of the above areas.

Any new Forest areas, it subsequently decided to be brought within the above two sanctuaries from the neighboring Divisions, shall also come under the administrative control of the respective Wildlife Divisions.

The two Wildlife Divisions (Satkosia Wildlife & Mahanadi Wildlife Division) will function under the supervision of Conservator of Forests(T), Angul & Conservator of Forests(T) Berhampur Circle respectively who will exercise all administrative and financial, powers as Conservator of Forests in respect of the Wildlife Division under his jurisdiction (i.e. Satkosia Wildlife & Mahanadi Wildlife Division). The respective Conservators are also empowered U/s 56(2-d) of the Orissa Forest Act, 1972 to exercise the powers mentioned therein for the areas of the Wildlife Divisions under their administrative jurisdiction.

The reorganization of Rangers, Sections and beats in Satkosia Wildlife Division and Mahanadi Wildlife Division shall be done by Chief Wildlife Warden, Orissa immediately after the issue of this resolution.

**BY ORDER OF THE GOVERNOR**  
**B.K.PATNAIK**  
**COMMISSIONER-CUM-SECRETARY TO GOVT.**

**APPENDIX-5**

**STATEMENT SHOWING LENGTH OF BOUNDARIES OF THE RESERVE FORESTS & PROTECTED FORESTS IN THE SANCTUARY**

Sl.No	Name of the Blocks	Compartment	No. of boundary pillars existing	Length of existing boundary line ( in Kms)	Length of common boundary (in Kms)	Block on the side of it	Length of inter division boundary (in Kms)

1	2	3	4	5	6	7	8
1	Bolongo (Part) RF	11 & 12	-	9.0	-	Raigoda, Tulka, Jocub	
2	Jocub RF	1 to 6	60	7.33	14.84	Bolong, Tulka, Purunakote, Takarsingha	
3	Takarsingha RF	1 to 9	103	10.34	16.04	Jocub, Purunakote, Chhotamunda	
4	Chhotamunda RF	1 to 5	81	9.33	8.64	Tainsi, Kuru, Purunakote, Baghmunda, Takarsingha	
5	Kuru RF	1 to 9	20	3.74	17.94	Tainsi, Chhotamunda, Purunakote, Majhipada	Pampasar-3.0 Purunakote-0.74
6	Tainsi RF	1 to 10	150	17.04	17.65	Chhotamunda, Kuru, Baghmunda	
7	Baghamunda RF	1 to 13	69	20.18	17.95	Majhipada	10.1 Athamallik - (4.48 Natural)
8	Purunakote RF	1 to 20	178	18.7	28.8	Chhotamunda, Takarsingha, Tulka, Katrang, Tikarpada	
9	Majhipada RF	1 to 17	94	23.4	17.36	Baghamunda, Kuru	12.0 Athamallik (4.48 Natural), Tikarpada-14.4 Purunakote-9.0
10	Tuluka RF	1 to 12	55	12.34	15.00	Raigoda, Bolong, Jocub	6/9 Athagarh
11	Tikarpada RF	1 to 9	21	14.4	8.6	Purunakote, Katrang	
12	Hatidhara RF	23 to 27	-	14.4	-	Majhipada	
13	Raigoda RF	1 to 16	25	22.25	18.00	Tulka, Bolong	14.25 Athgarh
14	Katrang RF	1 to 11	72	21.71	14.56	Tikarpada, Purunakote, Tulka	
15	Jodum BRF	Block I & II		13.85	-	Katrang	
16	Padmatola RF	1 to 11	247	32.00	-	-	

17	Arakhapadar RF	1 & 2	-	-	-	-	
18	Mahanadi RF	1 to 17	425	68.750	-		10.00 Mahanadi Division

## APPENDIX-6

### LIST OF PLANTS, TREES, SHRUBS, CLIMBERS, HERBS.

No.	LOCAL NAME	BOTANICAL NAME	FAMILY
1	Acacia/ Sunajhari	<i>Acacia auriculiformis</i>	Mimosaceae
2	Akasmali / Akas nim	<i>Mellingtonia hortensis</i>	Bignoniaceae
3	Amba/Am	<i>Mangifera indica</i>	Anacardiaceae
4	Ambada/Amda	<i>Spondias pinnata</i>	Anacardiaceae
5	Ambta	<i>Bauhinia recemosa</i>	Fabaceae
6	Amla/Aunla	<i>Embllica officinalis</i>	Euphorbiaceae
7	Amthi	<i>Lasiobema retysum</i>	Caesalpiniaceae
8	Anchhu	<i>Morinda tinctoria</i>	Rubiaceae
9	Ankula	<i>Alangium lamarckii</i>	Alangiaceae
10	Arjuna/Kaha/Kau	<i>Terminalia arjuna</i>	Combretaceae
11	Asan/Sahaj	<i>Terminalia tomentosa</i>	Combretaceae
12	Ashok	<i>Saraca asoca</i>	Fabaceae
13	Aswatha/Peepal/Osta	<i>Ficus religiosa</i>	Moraceae
14	Babul	<i>Acacia nilotica</i>	Mimosaceae
15	Badasundari	<i>Heritiera fomes</i>	Sterculiaceae
16	Bahada	<i>Terminalia belerica</i>	Combretaceae
17	Bana Ruar	<i>Aegialites rotundifolia</i>	Plumbaginaceae
18	Banakapasia	<i>Kydia calycina</i>	Malvaceae
19	Banalembu	<i>Merope angulata</i>	Rutaceae
20	Banarua	<i>Aegialitis rotundifolia</i>	Plumbaginaceae
21	Bandari	<i>Bruguiera gymombiza, Bruguiera sexangula</i>	Rhizophoraceae
22	Bandhan/Tinsa	<i>Ougeinia oojeinensis</i>	Fabaceae
23	Baniah / Baniya	<i>Hibiscus tiliaceus</i>	Malvaceae
24	Bantala	<i>Ardisia solanacea</i>	Myrsinaceae
25	Bara	<i>Ficus bengalensis</i>	Moraceae
26	Barabakulia/Dhoben	<i>Dalbergia paniculata</i>	Fabaceae
27	Barada	<i>Bauhinia purpurea</i>	Caesalpinaceae

28	Barkoli	<i>Ziziphus mauritiana</i>	Rhamnaceae
29	Baruna	<i>Crateva religiosa</i>	Capparaceae
30	Batra	<i>Melia dubia</i>	Meliaceae
31	Baula	<i>Mimusops elengi</i>	Sapotaceae
32	Behenta	<i>Limonia acidissima</i>	Rutaceae
33	Bel	<i>Aegle marmelos</i>	Rutaceae
34	Benta	<i>Naringi crenulata</i>	Rutaceae
35	Bhalia	<i>Semecarpus anacardium</i>	Anacardiaceae
36	Bheru	<i>Chloroxylon swietenia</i>	Rutaceae
37	Cashew	<i>Anacardium occidentale</i>	Anacardiaceae
38	Chadheigudi	<i>Vitex leucoxylon</i>	Verbenaceae
39	Chakunda	<i>Cassia siamea</i>	Ceasalpinaceae
40	Champa	<i>Michelia champaca</i>	Annonaceae
41	Chara	<i>Buchanania lanzan</i>	Anacardiaceae
42	Chauli (Mukha)	<i>Cassine glauca</i>	Celastraceae
43	Chhatian	<i>Alstonia scholaris</i>	Apocynaceae
44	Chhotarai	<i>Dillenia aurea</i>	Dilleniaceae
45	Chhuinpatuli	<i>Stereospermum angustifolium</i>	Bignoniaceae
46	Chikini/Kalchua	<i>Glochidion zeylanicum</i>	Euphorbiaceae
47	Churunda	<i>Lumnitzera racemosa</i>	Combretaceae
48	Dalsinga /Kumarchikini	<i>Canthium didymum</i>	Rubiaceae
49	Damgurubu	<i>Gardenia latifolia</i>	Rubiaceae
50	Debadaru	<i>Polyalthia longifolia</i>	Annonaceae
51	Dhalabani	<i>Avicennia alba</i>	Verbenaceae
52	Dhalasiris	<i>Albizia procera</i>	Mimosaceae
53	Dhalasundari	<i>Heritiera Littoralis</i>	Sterculiaceae
54	Dhaman	<i>Grewia tiliifolia</i>	Tiliaceae
55	Dhaura	<i>Anogeissus latifolia</i>	Combretaceae
56	Dhauranga	<i>Holoptelia integrifolia</i>	Ulmaceae
57	Dimiri	<i>Ficus lanceolata</i>	Moraceae
58	dot	<i>Bruguiera parviflora</i>	Rhizophoraceae
59	Eucalyptus/ Nilagiri	<i>Eucalyptus spp</i>	Myrtaceae
60	Gambhari	<i>Gmelina arborea</i>	Verbenaceae
61	Gandha palas	<i>Miliusa velutina</i>	Annonaceae
62	Ganga siuli	<i>Nyctanthes arbortristis</i>	Oleaceae
63	Ganiari/Gelgela	<i>Cochlospermum religiosum</i>	Bixaceae
64	Garani	<i>Ceriops decandra</i>	Rhizophoraceae
65	Garh khair	<i>Acacia lenticularis</i>	Mimosaceae
66	Garth	<i>Ceriops roxburghiana</i>	Rhizophoraceae
67	Genduli	<i>Sterculia urens</i>	Sterculiaceae



68	Ghigidi	<i>Sapium indicum</i>	Euphorbiaceae
69	Ghontol (Gotha)	<i>Ziziphus xylocarpus</i>	Rhamnaceae
70	Ghoralanjia	<i>Albizia chinensis</i>	Mimosaceae
71	Ghurudu	<i>Gardenia gummifora</i>	Rubiaceae
72	Gilo	<i>Ceasalpinia bonduc</i>	Ceasalpinaceae
73	Giringa	<i>Pterospermum canescens</i>	Sterculiaceae
74	Goan	<i>Excoecaria agallocha</i>	Euphorbiaceae
75	Gohira	<i>Acacia leucophloea</i>	Mimosaceae
76	Gosinga	<i>Dolichandrone spathaceae</i>	Bignoniaceae
77	Guanar	<i>Amoora cucullata</i>	Meliaceae
78	Habali	<i>Thespesia populnea</i>	Malvaceae
79	Halda	<i>Diospyros montana</i>	Ebenaceae
80	Haldu/kurum	<i>Adina cordifolia</i>	Rubiaceae
81	Harida	<i>Terminalia chebula</i>	Combretaceae
82	Harkach	<i>Acanthus illicifolius, Acanthus volubilis</i>	Acanthaceae
83	Hentala	<i>Phoenix paludos</i>	Arecaceae
84	Hinjal	<i>Barringtonia acutangula</i>	Myrtaceae
85	Jaisanda	<i>Litsea glutinosa</i>	Lauraceae
86	Jamu/Jambu	<i>Syzygium cumini</i>	Myrtaceae
87	Jari	<i>Ficus virens</i>	Moraceae
88	Jeuth	<i>Artocarpus lacucha</i>	Moraceae
89	Jhaun	<i>Casuarina equisetifolia</i>	Casurinaceae
90	Kadam/Kadamba	<i>Anthocephalus cadamba</i>	Rubiaceae
91	Kaitha	<i>Limonia acidissima</i>	Rutaceae
92	Kalabani	<i>Avicennia officinalis</i>	Verbenaceae
93	Kalachua	<i>Diospyros sylvatica</i>	Ebenaceae
94	Kalasisir	<i>Albizia lebbek</i>	Mimosaceae
95	Kaliachua	<i>Bruguiera cylindrica</i>	Rhizophoraceae
96	Kamlagundi	<i>Mallotus philippinensis</i>	Euphorbiaceae
97	Kanchan	<i>Bauhinia variegata</i>	Fabaceae
98	Kandhia	<i>Citrus aurantium</i>	Rutaceae
99	Kangda	<i>Xylia xylocarpa</i>	Mimosaceae
100	Kanikasundari	<i>Heritiera kanikensis</i>	Sterculiaceae
101	Kansa	<i>Hymenodictyon excellsum</i>	Rubiaceae
102	Kapasia	<i>Kydia calycina</i>	Malvaceae
103	Karada/Karla	<i>Cleistanthus collinus</i>	Euphorbiaceae
104	Karanja	<i>Pongamia pinnata</i>	Fabaceae
105	Kasi/Khais	<i>Bridelia retusa</i>	Euphorbiaceae
106	Katakala	<i>Strychnos potatorum</i>	Longaniaceae

107	Kathabadam	<i>Terminalia catappa</i>	Combretaceae
108	Kathjamu	<i>Eugenia heyneana</i>	Myrtaceae
109	Katranga/Domkurudu	<i>Gardenia latifolia</i>	Rubiaceae
110	Kekra	<i>Bruguiera caryophylloides</i>	Rhizophoraceae
111	Kendu/Tendu	<i>Diospyros melanoxylon</i>	Ebenaceae
112	Kerua	<i>Sonneratia apetala</i>	Sonneratiaceae
113	Keruhan	<i>Sonaretia appittela</i>	Sonneratiaceae
114	Khair	<i>Acacia catechu</i>	Mimosaceae
115	Khakada	<i>Casearia elliptica</i>	Samydaceae
116	Kharkhari	<i>Acrostichum aureum</i>	Acrostichaceae
117	Kharsi	<i>Aegiceras corniculatum</i>	Myrsinaceae
118	Khasana	<i>Ficus glaberrina</i>	Moraceae
119	Kochila	<i>Strychnos nuxvomica</i>	Longaniaceae
120	Kodala	<i>Erithropsis colorata</i>	Sterculiaceae
121	Krushanchuda	<i>Delonix regia</i>	Caesalpiniaceae
122	Kumbhi	<i>Careya arborea</i>	Lecythidaceae
123	Kusum	<i>Schleichera oleosa</i>	Sapindaceae
124	Lanka badhial	<i>Annona reticulata</i>	Annonaceae
125	Latasundari	<i>Brownlowia tersa, Brownlowia lanceolata</i>	Tiliaceae
126	Lembu (Kagaji)	<i>Citrus aurantifolia</i>	Rutaceae
127	Lemur Mai/ Raj Mai	<i>Bursera penicellata</i>	Burseraceae
128	Lodha	<i>Symplocos racemosa</i>	Symplocaceae
129	Mahanimba	<i>Ailanthus excelsa</i>	Simarubaceae
130	Mai	<i>Lannea coromandelica</i>	Anacardiaceae
131	Manda/Gandhaguria	<i>Macaranga peltata</i>	Euphorbiaceae
132	Mankada kendu	<i>Diospyros embryopteris</i>	Ebenaceae
133	Masitha	<i>Intsia bijuga</i>	Caesalpiniaceae
134	Miriga	<i>Salvadora persica</i>	Salvadoraceae
135	Mohul	<i>Madhuca indica</i>	Sapotaceae
136	Mokha/Mukha	<i>Schrebera swietenoides</i>	Oleaceae
137	Morda	<i>Milletia ariculate</i>	Fabaceae
138	Muchkunda	<i>Pterospermum acerifolium</i>	Sterculiaceae
139	Mundi/Mitkania	<i>Mitragyna parviflora</i>	Rubiaceae
140	Murmuri	<i>Antidesma diandrum</i>	Euphorbiaceae
141	Neem/Limbo	<i>Azadirachta indica</i>	Meliaceae
142	Nimburumoi	<i>Bursera serrata</i>	Burseraceae
143	Nypa palam	<i>Nypa fruticans</i>	Arecaceae
144	Oau	<i>Dillenia indica</i>	Dilleniaceae
145	Ooanra	<i>Aglaia cucullata</i>	Meliaceae

146	Orua	<i>Sonneratia casolaris</i> , <i>Sonneratia alba</i>	Sonneratiaceae
147	Palas/Phalas	<i>Butea monosperma</i>	Fabaceae
148	Paldhua	<i>Erythrina indica</i>	Fabaceae
149	Panas	<i>Artocarpus integrifolia</i>	Moraceae
150	Paniamba	<i>Sarbera odilum</i>	
151	Panigambhari/Tabhar	<i>Trewia nudiflora</i>	Euphorbiaceae
152	Panikadala	<i>Firmiana colarata</i>	Sterculiaceae
153	Panikusum/Pitakusum	<i>Aphanamixis polystachya</i>	Meliaceae
154	Panipatuli	<i>Lagerstroemia speciosa</i>	Lythraceae
155	Patamasu/Gandhapalas	<i>Polyalthia cerasoides</i>	Annonaceae
156	Patoli	<i>Lagerstroemia speciosa</i>	Lythraceae
157	Patragundi/Poinsia	<i>Elaeocarpus robusta</i>	Tiliaceae
158	Phanphana/Phanpuni	<i>Oroxylon indicum</i>	Bignoniaceae
159	Phasi	<i>Anogeissus acuminata</i>	Combretaceae
160	Piasal/Bija	<i>Pterocarpus marsupium</i>	Fabaceae
161	Pitakorua	<i>Xylocarpus molluccensis</i>	Meliaceae
162	Pitamai	<i>Garuga pinnata</i>	Burseraceae
163	Pitamari	<i>Xylocarpus momsensis</i>	Icacinaceae
164	Poichandia	<i>Putranjiva roxburghii</i>	Euphorbiaceae
165	Poijamu/Bhatjamu	<i>Syzygium caryophyllifolium</i>	Myrtaceae
166	Punang/Polanga	<i>Calophyllum inophyllum</i>	Guttiferaceae
167	Radhachuda	<i>Peltophorum ferrugineum</i>	Caesalpiniaceae
168	Rai (Mangrove)	<i>Rhizophora condalaria</i> / <i>Rhizophora mucronate</i>	Rhizophoraceae
169	Rai/Kerengila/Michumuchu	<i>Dillenia pentagyna</i>	Dilleniaceae
170	Raj moi	<i>Lanea coromandelica</i>	Anacardiaceae
171	Rith/Muktamaja	<i>Sapindus emerginatus</i>	Sapindaceae
172	Rohini	<i>Soymida febrifuga</i>	Meliaceae
173	Saguan	<i>Tectona grandis</i>	Verbenaceae
174	Sahada	<i>Streblus asper</i>	Moraceae
175	Sajana	<i>Moringa pterigosperma</i>	Moringaceae
176	Sal/Sargi/Rengal	<i>Shorea robusta</i>	Dipterocarpaceae
177	Salai	<i>Boswellia serrata</i>	Burseraceae
178	Salap	<i>Caryota urens</i>	Palmae/ Arecaceae
179	Salara/Mokam/Potua	<i>Catunaregam spinosa</i>	Rubiaceae
180	Sidha/Senha	<i>Lagerstroemia parviflora</i>	Lythraceae
181	Siju	<i>Euphorbia neriifolia</i>	Euphorbiaceae
182	Simal/Simili	<i>Bombax ceiba</i>	Bombacaceae
183	Sindhika	<i>Kandelia candal</i>	Rhizophoraceae

184	Singada	<i>Cynometra iripa, Cynometra ramiflora</i>	Ceasalpinaceae
185	Singalbani	<i>Avicennia maringa</i>	Verbenaceae
186	Sissoo	<i>Dalbergia sissoo</i>	Fabaceae
187	Sissoo/Rosewood	<i>Dalbergia latifolia</i>	Fabaceae
188	Sisumar	<i>Xylocarpus granatus</i>	Icacinaceae
189	Sisumar	<i>Xylocarpus granatum</i>	Meliaceae
190	Sunari	<i>Cassia fistula</i>	Caesalpinaceae
191	Sundari (Dhala)	<i>Heritiera mitonallis</i>	Sterculiaceae
192	Sundari (Kala)	<i>Heritiera fomous</i>	Sterculiaceae
193	Tala	<i>Borassus flabelliformis</i>	Palmae/ Arecaceae
194	Tambal	<i>Ficus hispida</i>	Moraceae
195	Tangarchampa/Patharchampa	<i>Ochna obtusata</i>	Ochnaceae
196	Tava	<i>Citrus grandis</i>	Rutaceae
197	Teak/ Sagan	<i>Tectona grandis</i>	Verbenaceae
198	Telei	<i>Wendlandia tinctoria</i>	Rubiaceae
199	Telkuruma/Bhuinkuruma	<i>Ixora arborea</i>	Rubiaceae/Fabaceae
200	Tentra	<i>Albizzia procera</i>	Mimosaceae
201	Tentuli/Kania	<i>Tamarindus indica</i>	Caesalpinaceae
202	Theiko	<i>Randia uliginosa</i>	Rubiaceae
203	Tunda	<i>Lumnitzera racemosa</i>	Combretaceae
<b>B.BAMBOO</b>			
1	Balangi bans	<i>Oxytenanathera nigrociliata</i>	Poaceae
2	Daba bans/kanta bans	<i>Bambusa arundinacea</i>	Poaceae
3	Dungi bans	<i>Cephalostachyum pergacile</i>	Poaceae
4	Salia/Hill bambo	<i>Dendrocalamus strictus</i>	Poaceae
<b>C.SHRUBS/HERBS</b>			
1	Agabadhu	<i>Premna obtusifolia</i>	Verbenaceae
2	Agnijal/Bana jalangi	<i>Vernonia cinerea</i>	Asteraceae
3	Agnijhal	<i>Clausena excavata</i>	Rutaceae
4	Amarpoi	<i>Bryophyllum calycinum</i>	Crassulaceae
5	Amiri/ Raipani	<i>Ipomia fistula</i>	Convolvulaceae
6	Anantamula	<i>Hemidesmus indicus</i>	Asclepidaceae
7	Anantamula	<i>Tylophlora indica/ Tylophlora tenuis</i>	Asclepidaceae
8	Ankarati	<i>Solanum xanthocarpum</i>	Solanaceae
9	Ankhukoli	<i>Carrissa opaca</i>	Apocynaceae
10	Ankula	<i>Alangium salvifolium</i>	Alangiaceae
11	Arakha	<i>Calotropis gigantea</i>	Asclepiaceae

12	Arkala	<i>Millettia racemosa</i>	Fabaceae
13	Ata	<i>Annona squamosa</i>	Annonaceae
14	Badianla	<i>Phyllanthus fraternus</i>	Euphorbiaceae
15	Badichand/Cadichang	<i>Symphorema polyandrum</i>	Verbenaceae
16	Bahumruga	<i>Flagliaria indica</i>	Flagellariaceae
17	Baigaba	<i>Jatropha gossypifolia</i>	Euphorbiaceae
18	Baincha koli	<i>Flacourtia indica</i>	Flacourtiaceae
19	Bajramuli	<i>Sida spinosa</i>	Malvaceae
20	Ban Olua	<i>Amorphophallus bulbifera</i>	Arecaceae
21	Ban soris	<i>Cleome viscosa</i>	Capparaceae
22	Banachanda, Ranikathi	<i>Flagellaria indica</i>	Flagellariaceae
23	Banachireita	<i>Leea asiatica</i>	Ampellidaceae
24	Banakapasi	<i>Thespesia lampas</i>	Malvaceae
25	Banbiri	<i>Vigna radiata</i>	Fabaceae
26	Banchakunda	<i>Cassia tora</i>	Fabaceae
27	Banhaldi	<i>Curcuma aromatica</i>	Zingiberaceae
28	Bani	<i>Avicennia officinalis</i>	Verbenaceae
29	Bankadali	<i>Musa sapientum</i>	Musaceae
30	Bankhajuri/Pinokhajuri	<i>Phoenix sylvestris</i>	Palmaceae
31	Bankolthi	<i>Atylosia scarabaeoides</i>	Fabaceae
32	Banmalli	<i>Jasminum arborescens</i>	Oleaceae
33	Banmug	<i>Phaseolus sublobatus</i>	Fabaceae
34	Banpiaja	<i>Urginea indica</i>	Liliaceae
35	Banrasun	<i>Scilla indica</i>	Liliaceae
36	Bansaru	<i>Colocasia esculenta</i>	Arecaceae
37	Bantulasi	<i>Ocimum basilicum</i>	Lamiaceae/Labiatae
38	Barkoli	<i>Zizyphus Mauritiana</i>	Rhamnaceae
39	Basanga	<i>Justicia adhatoda</i>	Acanthaceae
40	Batralata	<i>Salacia prinoides</i>	Hippocrateaceae
41	Batula	<i>Salicornia brachiata</i>	Chenopodiaceae
42	Begunia	<i>Vitex negundo</i>	Verbenaceae
43	Benth	<i>Brownlowia lanceolata</i>	Tiliaceae
44	Beta	<i>Calamus latifolius</i>	Arecaceae
45	Bhabhadalia	<i>Olax scandens</i>	Olacaceae
46	Bhains dera	<i>Strobilanthus auricunatus</i>	Acanthaceae
47	Bhersunga / Bhugsang	<i>Murrya koenigii</i>	Rutaceae
48	Bhuin Anla	<i>Phyllanthus niruri</i>	Euphorbiaceae
49	Bhuinkurwan/telkurwan	<i>Ixora arborea</i>	Rubiaceae
50	Bhuin-neem	<i>Andrographis paniculate</i>	Acanthaceae
51	Bichuati	<i>Tragia involucrata</i>	Euphorbiaceae

52	Bisalyakarani	<i>Tridax procumbens</i>	Asteraceae
53	Chauli (Mukha)	<i>Cassine glauca</i>	Verbenaceae
54	Chiani	<i>Clerodendron inerme</i>	Verbenaceae
55	Dalsinga	<i>Canthium didymum</i>	Rubiaceae
56	Dhatiki	<i>Woodfordia fruticosa</i>	Lythraceae
57	Dhatura	<i>Datura fastuosa</i>	Solanaceae
58	Durarikoli	<i>Opilia amentacea</i>	Opiliaceae
59	Gangoi	<i>Melastoma malabathricum</i>	Melastomaceae
60	Gayas	<i>Leucas aspera</i>	Lumiaceae/Labiatae
61	Gayatulasi	<i>Orthosiphon pallidus</i>	Lamiaceae/Labiatae
62	Gila	<i>Entada scandens</i>	Mimosaceae
63	Giliri/gilira	<i>Indigofera cassioides</i>	Fabaceae
64	Giriasaga	<i>Suaeda maritima/ Suaeda nudiflora</i>	Chenopodiaceae
65	Godabani	<i>Sesuvium portulacastrum</i>	Aizoaceae
66	Gohirakanta	<i>Dalbergia spinosa</i>	papilionaceae
67	Gotha	<i>Croton oblongifolius</i>	Euphorbiaceae
68	Guakuli	<i>Diospyros ferrea</i>	Ebenaceae
69	Gudumari	<i>Gymnema sylvestre</i>	Asclepiadaceae
70	Haldigundi	<i>Spilanthes calva</i>	Rubiaceae
71	Harakancha	<i>Acanthus illicifolius</i>	Acanthaceae
72	Hental	<i>Phoenix paludosa</i>	Arecaceae
73	Indrajala	<i>Holarrhena malaccensis</i>	Apocynaceae
74	Iswarjata	<i>Celosia cristata</i>	Amaranthaceae
75	Jagula	<i>Tamrix troupii/ Tamrix dioica/ Tamrix gallica</i>	Tamricaceae
76	Jajang	<i>Phyllanthus ricularis</i>	Euphorbiaceae
77	Jatijatia saru	<i>Urena repanda</i>	Malvaceae
78	Jatjatiamota	<i>Urena cinnata</i>	Malvaceae
79	Jhumpuri	<i>Phyllochlamys spinosa</i>	Moraceae
80	Jojoka	<i>Tarenna asiatica</i>	Rubiaceae
81	Kakusia	<i>Strobilanthus scaber</i>	Acanthaceae
82	Kamini	<i>Murraya exotica</i>	Rutaceae
83	Kanta beta	<i>Calamus guruba</i>	Arecaceae
84	Kantamaul	<i>Ventilago denticulata</i>	Rhamnaceae
85	Kantasiju	<i>Euphorbia nivulia</i>	Euphorbiaceae
86	Kanteikoli	<i>Zizyphus oenoplia</i>	Rhamnaceae
87	Karhjamu	<i>Eugenia heyneana</i>	Myrtaceae
88	Kaskasi Jhari	<i>Ficus parasitica</i>	Moraceae
89	Kathamajuati	<i>Lawsonia inermis</i>	Lithraceae

90	Katukula	<i>Sacrolobus globosus</i>	Asclepidaceae
91	Ketakikia	<i>Pandanus fascicularis</i>	Pandanaceae
92	Khajuri	<i>Phoenix dactylifera</i>	Arecaceae
93	Kharal	<i>Gardenia turgida</i>	Rubiaceae
94	Kharkhari	<i>Clerodendrum viscosum</i>	Verbenaceae
95	Khirkit/Khirkichi	<i>Mimosa himalayana</i>	Mimosaceae
96	Khirkoli	<i>Manilkara hexandra</i>	Sapotaceae
97	Krushnaparni	<i>Desmodium polycarpum</i>	Fabaceae
98	Kukurchhatia	<i>Pavetta crassicaulis</i>	Rubiaceae
99	Kumar chikni	<i>Canthium dicoccum</i>	Rubiaceae
100	Kurei/kher	<i>Holarrhena antidysenterica</i>	Apocynaceae
101	Kuruda/Ghurudu	<i>Gardenia gummifera</i>	Rubiaceae
102	Lajwanti/Lajkulilata	<i>Mimosa pudica</i>	Mimosaceae
103	Lankajada	<i>Ricinus communis</i>	Euphorbiaceae
104	Lantana/Bholupadi /Nagairi	<i>Lantana camara</i>	Verbenaceae
105	Latrai	<i>Sacrolobus carinatus</i>	Asclepidaceae
106	Ludhu	<i>Symplocos racemosa</i>	Oleaceae
107	Lunikia	<i>Pandanus foetidus</i>	Pandanaceae
108	Madanga	<i>Loranthus longiflorus</i>	Loranthaceae
109	Mamuri	<i>Antidesma diandrum</i>	Euphorbiaceae
110	Masundi	<i>Croton oblongifolius</i>	Tiliaceae
111	Mayurachulia	<i>Celosia argenta</i>	Amaranthaceae
112	Mirgichra/Barenga	<i>Grewia elastica</i>	Tiliaceae
113	Mohan/Patua/Salar	<i>Randia dumetorum</i>	Rubiaceae
114	Mula	<i>Raphanus sativas</i>	Brassicaceae
115	Muraphal/ muri muri	<i>Helicteres isora</i>	Sterculiaceae
116	Nahalbell	<i>Cipadessa baccifera</i>	Meliaceae
117	Narguni	<i>Atalantia monophylla</i>	Rutaceae
118	Nentei	<i>Caesalpinia crista</i>	Ceasaltiniaceae
119	Panikenduli	<i>Crinum defixum</i>	Amaryllidaceae
120	Patalgaruda	<i>Rauwolfia serpentina</i>	Apocynaceae
121	Poksunga	<i>Pogostemon benghalensis</i>	Lamiaceae
122	Raigidi	<i>Pentapropis capensis</i>	Asclepidaceae
123	Sablia	<i>Actinodaphne aungustifolia</i>	Lauraceae
124	Salparni	<i>Desmodium gangeticum</i>	Fabaceae
125	Salra	<i>Catunaregam nutans</i>	Rubiaceae
126	Singhapurna/Ranidantakathi	<i>Flemingia chappar</i>	Fabaceae
127	Suamloi	<i>Ichnocarpus frutiscens</i>	Apocynaceae
128	Sunaragada	<i>Grewia helicterifolia</i>	Tiliaceae
129	Talmuli	<i>Curculigo orchiodes</i>	Amaryllidaceae

130	Tinakoli	<i>Ziziphus rugosa</i>	Rhamnaceae
131	Tulsi	<i>Ocimum sanctum</i>	Lamiaceae
132	Urguna	<i>Cycas circinalis</i>	Cycadaceae
<b>D.CLIMBERS &amp; LIANES</b>			
1	Agnisikha	<i>Gloriosa superba</i>	Liliaceae
2	Akanbindhi	<i>Cissampelos pareira</i>	Menispermaceae
3	Asadhua	<i>Capparis zeylanica</i>	Capparidaceae
4	Atundi	<i>Combretum decandrum</i>	Combretaceae
5	Baidank	<i>Mucuna pruriens</i>	Fabaceae
6	Baingaloi	<i>Tragia plukenetii</i>	Euphorbiaceae
7	Bana alu	<i>Dioscorea hispida</i>	Dioscoraceae
8	Banakolthi	<i>Atylosia scarabaeoides</i>	Fabaceae
9	Bankundururu	<i>Trichosanthes cucumerina</i>	Cucurbitaceae
10	Bansimba	<i>Lablab purpurens</i>	Fabaceae
11	Bhadabhadalia	<i>Oxalys scandens</i>	Oxalaceae
12	Bhudel/Latapalas	<i>Butea superba</i>	Fabaceae
13	Bichhuati	<i>Tragia involucrata</i>	Euphorbiaceae
14	Dantari	<i>Acacia pennata</i>	Mimosaceae
15	Dhalakatrani	<i>Derris scandens</i>	papilionaceae
16	Dudhuloi	<i>Ichnocarpus frutescens</i>	Apocynaceae
17	Durkoli	<i>Erycibe paniculata</i>	Convolvulaceae
18	Ganj/Mardaloi	<i>Milletia auriculata</i>	Fabaceae
19	Gila	<i>Entada phaseoloides</i>	Mimosaceae
20	Gopakanhu/Dhudhiani	<i>Cryptolepsis buchhanani</i>	Periplocaceae
21	Gudmari	<i>Gymnema sylvestre</i>	Asclepidaceae
22	Handiphuta/Kataka	<i>Pueraria tuberosa</i>	Fabaceae
23	Hoya	<i>Hoya parasitica</i>	Asclepiadaceae
24	Kaincha	<i>Abrus precatorius</i>	Fabaceae
25	Kalakatrani	<i>Derris trifoliata</i>	papilionaceae
26	Kankada	<i>Momordica dioica</i>	Cucurbitaceae
27	Kansarilata	<i>Ipomoea pes-caprae</i>	Convolvulaceae
28	Kanta Alu	<i>Dioscorea glabra</i>	Dioscoraceae
29	Kanteikuli	<i>Ziziphus oenoplia</i>	Rhamnaceae
30	Kathakatrani	<i>Dalbergia candenatensis</i>	papilionaceae
31	Khamba Alu	<i>Dioscorea alata</i>	Dioscoraceae
32	Khsilata	<i>Finlaysonia obovata</i>	Asclepiadaceae
33	Korondialu	<i>Discoria belophylla</i>	Dioscoraceae
34	Kosa Alu	<i>Dioscorea puber</i>	Dioscoraceae
35	Kunjalata	<i>Ipomoea quamoclit</i>	Convolvulaceae
36	Madhabilata	<i>Hiptage madablata</i>	Malpighiaceae



37	Malanga	<i>Dendrophthoe falcata</i>	Loranthaceae
38	Malati	<i>Aganosma dichotoma</i>	Apocynaceae
39	Marda	<i>Milletia racemosa</i>	Fabaceae
40	Matka(Bana kunduri)	<i>Solena amplexicaulis</i>	Cucurbitaceae
41	Mossu	<i>Aorosa dioca</i>	
42	Muturilaha/Muter	<i>Smilax macrophylla</i>	Liliaceae
43	Nagairi	<i>Lantana camara</i>	Verbenaceae
44	Nirmuli	<i>Cuscuta reflexa</i>	Convolvulaceae
45	Noipalas/Latapalas	<i>Butea parviflora</i>	Fabaceae
46	Panayiri	<i>Aristolochia indica</i>	Aristolochiaceae
47	Pani Alu	<i>Dioscorea oppositifolia</i>	Dioscoraceae
48	Pani bet	<i>Calamus viminalis</i>	Arecaceae/Palmae
49	Pichhuli	<i>Gouania leptostachya</i>	Rhamnaceae
50	Pingu	<i>Colastrustrus pani ghasaculata</i>	Celastraceae
51	Pita Alu	<i>Dioscorea foetida</i>	Dioscoraceae
52	<i>Porta (Grah)</i>	<i>Dalbergia candenatensis / Dalbergia spinosa</i>	Fabaceae
53	Prasaruni	<i>Paederia foetida</i>	Rubiaceae
54	Rakta pichhuli	<i>Gouania leptostachya</i>	Rhamnaceae
55	Satabari	<i>Asparagus racemosus</i>	Liliaceae
56	Siali,Sualoi	<i>Bauhinia vahlii</i>	Fabaceae
57	Smilax/ Muturi species	<i>Smilax zeylanica</i>	Liliaceae
58	Tankualai	<i>Schefflera venulosa</i>	Araliaceae
59	Tunga Alu	<i>Discorea wallichii</i>	Dioscoraceae
<b>E. GRASSES</b>			
1	Bounsuni	<i>Saccharum munja</i>	Poaceae
2	Bena	<i>Vetiveria zizaniodes</i>	Poaceae
3	Chepti	<i>Evolvulus alsinoides</i>	Convolvulaceae
4	Chhana	<i>Imperata arundinaceae</i>	Poaceae
5	Dhanidhana	<i>Porteresia coarctata</i>	Poaceae
6	Dhanwantary/Khara	<i>Cymbopogon martinii</i>	Poaceae
7	Duba	<i>Cynodom dactylon</i>	Poaceae
8	Ghonda Bena	<i>Bothriochloa bladonii</i>	Poaceae
9	Keuti	<i>Cyperus corymbosis</i>	Cyperaceae
10	Kodua	<i>Paspalum scrobiculatum</i>	Poaceae
11	Luni	<i>Fimbristylis ferruginea</i>	Cyperaceae
12	Mutha	<i>Lipocarpa sphacelata</i>	Poaceae
13	Nala	<i>Phragmites karka</i>	Poaceae
14	Nalia	<i>Myriostachya wightiana</i>	Poaceae
15	Nalisugandhi	<i>Phragmites karka</i>	Poaceae

16	Panighasa	<i>Eragrostis japonica</i>	Poaceae
17	Phulchanchani/phuljhadu	<i>Thysanolaena maxima</i>	Poaceae
18	Sabai/Panasi/ Baguli	<i>Eulaliopsis binata</i>	Poaceae
19	Sinkhola	<i>Heteropogon contortus</i>	Poaceae
20	Tenda/Kastandi	<i>Saccharum spontaneum</i>	Poaceae
21	Tianshi	<i>Cyperus conglomerates</i>	Cyperaceae
<b>F.FERNS</b>			
1		<i>Actinopteris radiata</i>	Actiniopteridaceae
2		<i>Adiantum caudatum</i>	Adiantaceae
3		<i>Adiantum philippense</i>	Adiantaceae
4		<i>Alsophila gigantea</i>	Alistamaceae
5		<i>Alsophila spinulosa</i>	Alistamaceae
6		<i>Angiopteris evecta</i>	Angiopteridaceae
7		<i>Asplenium perakense</i>	Aspleniaceae
8		<i>Athyrium falcatum</i>	Athyriaceae
9		<i>Athyrium hohenackerianum</i>	Athyriaceae
10		<i>Athyrium parasnathense</i>	Athyriaceae
11		<i>Azolla pinnata</i>	Azollaceae
12		<i>Blechnum orientale</i>	Blechnaceae
13		<i>Bolbitis contaminans</i>	Lomariopsidaceae
14		<i>Bolbitis costata</i>	Lomariopsidaceae
15		<i>Ceratopteris thalictroides</i>	Ceratophyllaceae
16		<i>Cheilanthes tenuifolia</i>	Cheilantheaceae
17		<i>Christella parasitica</i>	Chenopodiaceae
18		<i>Diplazium esculentum</i>	Dioscoreaceae
19		<i>Drynaria querfolia</i>	Droseraceae
20		<i>Dryopteris cochleata</i>	Dryopteridaceae
21		<i>Dryopteris sparsa</i>	Dryopteridaceae
22		<i>Equisetum ramosissimum</i>	Equisetaceae
23		<i>Hemionotis arifolia</i>	Hemionitidaceae
24		<i>Lygodium flexuosum</i>	Lygodiaceae
25		<i>Macrothelyptis torresiana</i>	Thelypteridaceae
26		<i>Marsilea quadrifolia</i>	Marsileaceae
27		<i>Microlepia speluncea</i>	Dennstaedtiaceae
28		<i>Nephrolipsis brisesrata</i>	Nephrolepidaceae
29		<i>Ophioglossum reticulatum</i>	Ophioglossaceae
30		<i>Paraleptochilus decurrens</i>	Polypodiaceae
31		<i>Pneumatopteris truncata</i>	Thelypteridaceae
32		<i>Pronephrium nudatum</i>	Thelypteridaceae
33		<i>Pteridium aquilinum</i>	Dennstaedtiaceae

34		<i>Pteris biaurita</i>	Pteridaceae
35		<i>Pyrrisia mollis</i>	Polypodiaceae
36		<i>Selaginella indica</i>	Selaginellaceae
37		<i>Selaginella nairii</i>	Selaginellaceae
38		<i>Sphenomeris chinnensis</i>	Lindsaeaceae
<b>G.ORCHIDS(ORCHIDACEAE)</b>			
1		<i>Acampe carinata</i>	Orchidaceae
2		<i>Aerides maculosum</i>	Orchidaceae
3		<i>Bulbophyllum cariniflorum</i>	Orchidaceae
4		<i>Cottonia peduncularis</i>	Orchidaceae
5		<i>Cymbidium aloifolium</i>	Orchidaceae
6		<i>Dendrobium bicameratum</i>	Orchidaceae
7		<i>Dendrobium herbaceum</i>	Orchidaceae
8		<i>Dendrobium macrostachyum</i>	Orchidaceae
9		<i>Dendrobium regium</i>	Orchidaceae
10		<i>Eulophia nuda</i>	Orchidaceae
11		<i>Gastrochilus inconspicuum</i>	Orchidaceae
12		<i>Geodorum densiflorum</i>	Orchidaceae
13		<i>Goodyera procera</i>	Orchidaceae
14		<i>Habenaria commelinifolia</i>	Orchidaceae
15		<i>Luisia trichorhiza</i>	Orchidaceae
16		<i>Malaxis densiflora</i>	Orchidaceae
17		<i>Oberonia ensiformis</i>	Orchidaceae
18		<i>Pachystoma senile</i>	Orchidaceae
19		<i>Pecteilis gigantea</i>	Orchidaceae
20		<i>Pelatantheria insectifera</i>	Orchidaceae
21		<i>Peristylus constrictus</i>	Orchidaceae
22		<i>Pholidota pallida</i>	Orchidaceae
23		<i>Rhynchostylis retusa</i>	Orchidaceae
24		<i>Vanda tessellate</i>	Orchidaceae
25		<i>Vanda testaceae</i>	Orchidaceae
26		<i>Zeuxine strateumatica</i>	Orchidaceae

## APPENDIX-7

Sighting location of mammals				
Sl.No.	Species	R.F.	Compt.No.	Local name
1	Tiger	Purunakote	15	Hadibasa Bara
		Raigoda	4	Raigoda- Nuagarh
		Purunakote	9	Asurakhhol
		Purunakote	11	Asurakhhol
		Raigoda	13 &14	Kuadoli
		Bolanga	11	Kantarsingha
		Tulka	2 & 3	Kuanali
		Majhipada	12	Hatigirija

		Majhipada	10	Kadalikhola
		Raigoda	15	Rasanda
		Tikarpada	3	Kandhaida
		Takarsingha	2	Atharmile
		Baghmunda	8	
		Mahanadi	4 & 5	Near Kuturi village
		Padmatola	6; & 7	Near Marada village
		Padmatola	3	Near Sitalpani
2	Leopard	Raigoda	3	Near Raigoda village
		Raigoda	1	Near Brahamanidei GT
		Purunakote	9	Near Purunakote village
		Kuru	6 & 7	Near Gopalpur village
		Tikarpada	5	Near Tikarpada village
		Majhipada	7	Near Balisahi of Majhipada village
		Baghmunda	9 & 12	(Near Baghmunda)
		Baghmunda	2	(Near Dolasingha & Dalki village)
		Katrang	2	(near Katrang village)
		Tulka	7, 12	
		Jocub	6	

		Jocub	2	(Near Pampasar village)
		Chhotamunda	5	Near Salor village
		Tainsi	10	Near Tarava
		Mahanadi	1,2,7,8,9,17	Khala Khala nala
3	Indian	Raigoda	2	(Majhi khaman)
	Bison/	Katrang	4,5	(Khajurinalia)
	Gaur	Purunakote	11,16,17,18	
		Tikarpada	3	(Kandhaida)
		Majhipada	10	
		Balanga	11	(Kantarsingha)
		Mahanadi	4,5,17	
		Purunakote	17 & 18	Chhotkei-A
		Katrang	4	Siaribhundi
		Raigoda	2	Raigoda-A
4	Elephant	Jocub	1,2,3,4,5,6	Pampasar, Labangi
		Balanga	11,12	
		Raigoda	1,2,3,4,5,6,7, 8,9,10,14,15, 16	Raigoda  Bhurkundi, Hiteikhola
		Sisupathar beat	6	Ambakhola, Suhaginalla
		Purunakote	1 to 11	NandiniNala,

				Ambakhola, Mundabandha, Asurkhola , Pointiri GT
		Majhipada	12 to 17	Hatigirija,
		Kuru	6,7,8,9	
		Tikarpada	1,2,3,4	KandhaidaGT, Jhanjhana nana
		Majhipada	5,7,9,10,11	Kadalikhola GT
5	Chousinga	Majhipada	17	
		Raigoda	4	
		Tulka	11	
		Purunakote	17& 18	Chhotkei-A
6	Sambar	Mahanadi	1,2,7	
		Throughout sanctuary		
7	Nilgai	Mahanadi	15 & 16	
8	Wild dog (Dhole)	Baghmunda	12,13	
		Kuru	8	
		Tulka	8&9	Tulka-D
		Jocub	3& 4	Labangi-C
9	Chittal	Mahanadi	7,8 & 9	And through out

				sanctuary
10	Giant squirrel			Through out sanctuary
11	Flying Squirrel	Chhamundia FRH Complex		
12	Kochila khai (Indian Pied hornbill)	Raigoda	3 &4	Near Raigoda village
		Tikarpada	4	Near Tikarpada village
		Majhipada	4	Near Majhipada village
		Mahanadi	4	Near Kuturi
13	Bhalia khai (Indian Grey hornbill)	Mahanadi		All along bank of river Mahanadi
14	Pangoline	Mahanadi	6,7	
15	Peacock	Tulka	4	
		Baghmunda	9	
		Tikarpada	5	
		Jocub	6	
		Purunakote	6	
		Mahanadi	6	Near Bahali, Khakhala nala)



16	King cobra	Mahanadi	7,8 & 9	
		Baghamunda	12	
		Tikarpada	3	Near Kandhaida
17	Mouse deer	Purunakote	14	Chhotkei-B
18	Hill Myna	Pampasar Range Office premises		
		Mahanadi	3 &4	
		Padmatola	1 &2	
19	Porcupine, Barking deer, Wild pig, Sloth bear, Sambar, Civet, jackal, Indian hare	Found all over the sanctuary		

**LIST OF BIRDS**

<b>Bird Group</b>	<b>Name of identified bird</b>	<b>Location where seen</b>
Darter & Cormorants & Grebe	1. Little Grebe of Dab Chick 2. Little Cormorant	Spd
Egrets & heron	3. Little egret 4. Intermediate Egret 5. Cattle egret 6. Indian Pond heron	Spd
Storks, Spoon bill, Flamingo & Ibis	7. Open bill stock ( <i>Asian open bill</i> ) 8. Woolly Nacked Stork 9. Black headed Ibis	Spd
Geese, Swans & Duckes	10. Brahminy Duck ( <i>Ruddy sheld Duck</i> ) 11. Bar headed goose 12. Lesser whistling Duck 13. Spotbilled duck 14. Cotton pygmy goose	Tp/Mp
Honey Buzzard, Baza & kites	15. Oriental honey buzzard 16. Shikra, 17. Black kite ( <i>linn eater</i> ) 18. Eurasian sparrow hawk	Pk Pk
Hawk Eagle	19. Changeable Hawk Eagle 20. Tawny Eagle 21. Osprey 22. Eurasian marsh Harrier 23. Pallid Harrier 24. Crested Serpent Eagle 25. Peregrine Falcon	Mp/Bm
Srubb fowl, partridges, Francolins,	26. Painted spurfowl 27. Gray partridge of ( <i>Pheasants</i> ) or ( <i>Francolin</i> ) 28. Red Spurfowl 29. Painted spurquail 30. Jungle or (common) bushquail	Tu Tp/Bm
	31. Red jungle fowl 32. Peal fowl	Tu/Pk

Waders	33. Bronze winged Jacana 34. Red wattled lapwing 35. Spur wing Lapwing or River lapwing 36. Yellow wattled lapwing 37. Common sand piper 38. Common snipe 39. Common Green shank 40. Common moor hen 41. White breasted water hen 42. Black winged stilt 43. Little ringed Plover 44. Indian skimmer	Spd  Spd/Pk Spd Spd  Spd Spd  Spd Tu
Terns	45. River terns	Spd/Mp
Sand goose Pigeons	46. Spotted dove 47. Emerald dove 48. Yellow footed green pigeon 49. Blue rock pigeon 50. Green Imperial Pigeon 51. Orange breasted pigeon 52. Ring dove or ( <i>Eurasian collared dove</i> ) 53. Oriental Turtle dove	Tu/Mp Tp/Bm Tu/Pk  Tu/Bm  Tp Tu
Parakeet	54. Rose ring parakeet 55. Blossom headed parakeet* 56. Alexandrine Parakeet	Tu/Mp/Pk Tu/Pk
Cuckoos, Malkohas, Nightjar	57. Common hawk cuckoo ( <i>Brain fever bird</i> ) 58. Asian Koel 59. Indian Cuckoo 60. Indian nightjar 61. Grey nightjar 62. Large tail nightjar 63. Blue faced Malkoha	Tu/Mp
Owl, Needle Trai	64. Spotted owlet 65. Eurasian Eagle owl 66. Dusky Eagle owl 67. White rumped needletail	
Rollers, Trogons	68. Indian Roller or ( <i>Blue Jay</i> ) 69. Malabar Trogon	Mp/Pk
King fisher Bee eaters, barbets and Hoopoe	70. Green bee eater 71. Chestnut headed bee eater 72. Blue tail bee eater 73. Hoopoe	Mp/Pkl Tp  Spd

	74. Copper smith barbet Brown headed barbet	Tu/Tp/Bm/Pk
Horn bills	75. Indian gray horn bill 76. Oriental pied horn bill	Bm/Mp
Wood peckers	77. Lesser golden backed or Black rumped flame back woodpecker 78. Common flame back wood packer 79. Black napped green woodpecker or Grey headed wood pecker 80. Greater Flameback woodpecker 81. Hear sported woodpecker	Bh
Broad bills, Loras, orioles pitas	82. Common lora 83. Eurasian Golden oriole 84. Black headed oriole or ( <i>Black hooded oriole</i> ) 85. Golden fronted leaf bird or Chloropsis Indian Pitta	Tu/Lg  Tp
Larks, Pipit, Sparrow	86. Ashy crowned sparrow larks 87. Jordan's bush lark 88. Tree pipit 89. Paddy field pipit or ( <i>Indian Pipit</i> ) 90. House sparrow 91. Oriental sky lark or ( <i>Small skylark</i> )	   Spd/Lg  Tu/Mp
Swallows & Martins	92. Common swallow or ( <i>Barn swallow</i> ) 93. Wire tailed swallow 94. Crested tree swift	Tu/Mp Lg Pk
Drongos	95. Black Drongo 96. Bronzed drongo 97. Greater Racket tailed drongo 98. Lesser Racket drongo 99. Spangled drongo White bellied drongo	MP/Pk Bm/Mp  Tp
Shrikes	100. Common wood shrike 101. By Backed shirike 102. Long tailed or ( <i>Rufous backed shrike</i> ) 103. Grey backedshrike*	Bm Mp Spd/Mp Tu
Starlings & Mynas	104. Common myna 105. Jungle myna 106. Gray headed myna Or ( <i>Chestnut tailed starling</i> ) 107. Asian pied starling 108. Brahminy starling or ) Brahminy myna) 109. Rosy sterling or ( <i>Rosy Pastor</i> ) 110. Common Hill myna 111. Bank myna	Tp/Pk Tu Pk  Mp Spd/Tp/Pk  Bh
Magpies & Tree Pies, Crow	112. Rufous Tree pie, 113. House / Common crow,	Lg Bm

	114. Jungle crow (Large billed crow) 115. Lesser caucal	Pk Tu/Mp
Cuckoo shriks & Minivets	116. Black headed cuckoo shrike 117. Scarlet minivet 118. Ashy minivet* 119. Small minivet	Lg
Bulbuls	120. Red vented Bulbul +++ 121. Red whiskered bulbul	Tu/Pk/Lg Spd/Mp/Pk
Babblers	122. Common Babbler 123. Jungle Babblers 124. Puff throated babbler or ( Spotted Babbler) 125. Chestnut fronted shrike babler* 126. Yellow breastd babler	Pk/Lg  Pk Lg
Fly catcher Lantin	127. Asian paradise flycatcher* 128. Red throated flycatcher 129. White throated fantail 130. Tickell's Blue fly catcher 131. Gray headed canary flycatcher 132. Blue throated flycatcher 133. Verditer flycatcher 134. Black napped monarch	Bh   Lg  Lg
Warblers & Tailor Birds	135. Unidentified warbler (with orange eyes) 136. Zitting cisticola or streaked fantail warbler 137. Common tailor bird 138. Yellow vented warbler* or ( <i>Black browed leaf warbler</i> ) 139. Ashy Prinia 140. Plain Prinia 141. Jungle Prinia	Lg Bm/Lg Tp
Robins	142. Oriental Magpie robin +++ 143. Pied bush char 144. Indian Robin 145. White rumped shama	Bm/Mp/ Pk/Lg Lg Bm/Mp/Tu
Thrush	146. Orange headed thrush	Tu/Bm
Tits & Sub birds	147. Great Tit or Gray tit 148. Purple Sun bird 149. Purple rumped Sun Bird 150. Olive backed Sun Bird* 151. Oriental white eye 152. Pale billed or Tickell's flower pecker 153. Black headed munia 154. Scaly breasted or spotted munia	Lg/Pk  Spd/Lg Tu/Pk Pk Tp Spd Spd

King fisher	155. Pied king fisher 156. White throated king fisher White breasted king fisher 157. Brown headed storked billed kingfisher 158. Small blue kingfisher or (Common kingfisher)	Tp Tu/Bh/Pk Mp  Tu
Wagtails	159. Large pied wag tail or ( <i>White browed wag tail</i> ) 160. Yellow wagtail 161. White wagtail	Spd Lg Bh/Lg

## APPENDIX-9

### LIST OF REPTILES

Sl. No	ENGLISH NAME/ COMMON NAME	SCIENTIFIC NAME	As per WL(p) Act	Red Data Book	CITES	STATUS
<b>Family: EMYDIDAE</b>						
<b>(The Fresh water terrapins: Hard shelled Turtles)</b>						
1	Batagur/River Terrapin/ Hadua Nadi Kaincha	Batagur Baska	Schedule-I	Endangered	Appendix-I	
2	Har shelled Turtle/ Kathha Kainchha	Kechuga tentoria	-	-	-	
3	Tutrl/Indian aw back/Roofed Terrapi/Kathha kainchha	Kechuga tentoria	Schedule-I	Endangered	Appendix-I	
<b>Family: TRIONY CHIDAE</b>						
<b>(The Fresh water terrapins: Soft shelled Turtles)</b>						
4	Narrow-headed soft shelled Turtle (Chitra kainchha)	Chitra Indica	Schedule-I	-	-	
5	Indian Flapshell Tutrl/Panka or Pokhari kainchha	-	-	-	-	
6	Indian or Ganges Softshelled Turtle	Lissemys punctata punctata				
<b>Family: EMYDIDAE</b>						
Scientific Name						

**(The Fresh water terrapins:**

**Hard shelled Turtles)**

1	Batagur/Rivber Terapin Hadua Nadi Kainchha	Batgur baska	Schedule-I	Endangered	Appendix-I
2	Hard-ShelledTurtle Kathha Kainchha	Kachuga tentoria	-	-	-
3	Indian Tent Turtle / Indian Saw/Back Roofed Terrapin/ Kathha Kainchha	Kachuga tecta tecta	Schedule-I	Vulnerable	Vulnerable

**Family:**

**Trionychida (The fresh water) terrapin; sol/ft shelled turtles**

4	Narrow-headed soft shelled Turtle (Chitra Kainchha)	Chitra Indica	Schedule-IV		
5	Indian flapshell Turtle Panka or Pakhari Kainchha	Lissemys punctata punctata	Schedule-I	Vulnerable	
6	Indian or Ganges Solt- shelledTurtle	Trinyx gangeticus or	Schedule-I	Vulnerable	Appendix-I
7	Peninsular Solt -shelled Turtle	Trionys liethi Aspideretes leithi	Schedule-IV		
8	Peacock-marked soft- shelled Turtle / Indian peacock soft shell Turtle	Triinyx hurum	Schedule-I	Vulnerable	Appendix-I

Family:

**CROCODILIANS**

CROCODILEDATE

9	Mugger / Marsh Crocodile /Gomuhs/ Kuji Kumbhira	Crocodylus Palustris	Schedule-I	Endangered	Appendix-I
10	Gharial (Thantia Kumbhira or Ghadial	Gavialis gangeticus	Schedule-I	Endangered	Appendix-I

**LIZARDS**

11	India garden lizard /common garden lizard /Blood suker (Endua)	Calotes versicolor			
12	Forest calotes (Kala Endua)	Caltes rouxi			
13	Indian Chameleon (Bahurupi Endua) Satabarania Endua	Chameleon zylanicus			
14	Fan throated lizard/Sita's lizard	Sitana ponticriana			

- |    |  |                      |
|----|--|----------------------|
| 15 | Sand Skin(Champe<br>Neula)                       | Mabuya bibroni       |
| 16 | Common Skin/<br>Brahminy Skin/ Champei<br>Neula  | Mabuya carinta       |
| 17 | Little Skin/ Bronze grass<br>skin (Champe Neula) | Mabuya macularia     |
| 18 | ....   | Lygosma albopunctata |
| 19 | ;;;  | Lygosma punctata     |

**FAMILY:-**

**GEKKONIDAE**

- |    |  |                              |
|----|--|------------------------------|
| 20 | Fat tailed Gecko   | Eublepharis<br>handwickij    |
| 21 | Spotted Indian House<br>Gecko/ Brooks Gecko/<br>(Jhitipiti)              | Hemidactylus brookij         |
| 22 | Common Indian House<br>Gecko / Yellow bellied<br>House Gecko (Jhitipiti) | Hemidactylus<br>flaviviridis |
| 23 | Smooth House Gecko/<br>South Indian House<br>Gecko (Jhitipiti)           | Hemidactylus frenatus        |
| 24 | Tree/Bank Gecko<br>(Jhitipiti)   | Hemidactylus<br>lescgeraulti |

**FAMILY:-**

**VARANIDAE**

- |    |   |                     |             |            |            |
|----|---|---------------------|-------------|------------|------------|
| 25 | Indian monitor /<br>Common monitor/<br>Bengal monitor Lizard<br>(Sorisia Godhi) | Varanus Bengalensis | Schedule-II | Endangered | Appendix-I |
| 26 | Yellow monitor Lizard<br>(Matia godhi)  | Varanus flavescens  | Schedule-II | Endangered | Appendix-I |

**SNAKES**

**FAMILY :-**

**TYPHLODPIDAE**

(Non Poisonous Snake)

- |    |  |                           |             |
|----|--|---------------------------|-------------|
| 27 | Common Worm Snake/<br>Common Blind Snakes<br>(Telia sapa) (Domundia<br>Sapa) | Ramphotyphlops<br>bramius | Schedule-IV |
| 28 | Beaked Worm Snaker<br>(Telia Sapa)   | Typhlops acutus           | Schedule-IV |
| 29 | Slender Worm Snaker<br>(Telia Sapa)  | Typhlops parrectus        | Schedule-IV |
| 30 | Telia Sapa   | Typhlops diardi diardi    |             |

**FAMILY:-**



**UROPELTIDE**

(Non Poisonous or harmless Snake)

31	...	<i>Uropeltis ocellatus</i>	Schedule-IV		
32	...	<i>Uropeltis elloiti</i>	...		

**FAMILY:-BODAE**

(Non Poisonous Snake)

33	Jhon's sand boa/Red or Blunt tailed sand boa/Brown sand boa (Do Mundia Boa)	<i>Eryxjohni</i>	Schedule-IV		Appendix-II
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34	India Python ( Ajarar)	<i>Python molurus molurus</i>	Schedule-IV	Endangered	Appendix-II
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35	Common Green Whip/ Common Vine Snake Laudankia	<i>Ahaetulla nasutus</i>	Schedule-IV		
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36	Fasciolated Rat Snake/ Branaded racer	<i>Argyrogera fasciolatus</i>	Schedule-IV		
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37	...	<i>Gerardia prevosotiana</i>	Schedule-IV		
38	Irubat flying Snake/ Golden tree snake/ Fying snake/Udanta sapa)	<i>Chrysopelea ornate</i>	Schedule-IV		

39	Kochi Sapa/ Bramhani Sapa/Matibitadi sapa	<i>Amphiesma stolta</i>	Schedule-IV		
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40	Common Indian bronze back/ Tree snake	<i>Dendrelaphis tristis</i>	Schedule-IV		
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41	Pointed Bronze back/ (Laudankia Sapa)	<i>Dendrelaphis pictus</i>	Schedule-IV		
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42	India Rat Snake (Dhamana)	<i>Ptyas mucosus</i>	Schedule-IV		
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**FAMILY:-DISPADAE (Non poisonous)**

43	Ganthar's Bridal Snake	<i>Drycalanus nympha</i>	Schedule-IV		
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44	Common Bridal Snake	<i>Lycodon aucicus</i>	Schedule-IV		
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45	Common Wolf Snake	<i>Lycodon aucicus</i>	Schedule-IV		
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46	Yellow speckled Wold snake	<i>Lycodon jara</i>	Schedule-IV		
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47	Shaw's/ Bared Wolf Snake	<i>Lycodon striatus</i>	Schedule-IV		
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48	Common Kukri snake	<i>Oligodon arne nsis</i>	Schedule-IV		
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**FAMILY:-HIOMALOPSIDAE (Non poisonous)**

49	Ceylon Cat Snake	<i>Boiga Ceylonensis</i>	Schedule-IV		
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50	Forester's Cat Snake	<i>Boiga trgonata</i>	Schedule-IV		
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51	Common cat snake/	<i>Boiga trgonata</i>	Schedule-IV		
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	Indian Gama(Matibiradi)			
52	Smooth Water Snake (Pani sapa)	Enhydris enhydris	Schedule-IV	
	<b>FAMILY:- NATRICIDAE (Non poisonous)</b>			
53	Striped Keel back (Dhanda sapa)	Amphiesma stolata	Schedule-IV	
54	Olive/Olivaceous (Keelback Snake)	Atretiuim schistesum	Schedule-II	
55	Green keelback	Macropisthodon plumbicolor	Schedule-IV	
56	Checked keelback/ Common water snake (Dhanda snake)	Xenochrophis piscator	Schedule-II	
	<b>FAMILY:- VIPERIDAE (Poisonous)</b>			
57	Saw scaled viper	Echis carinatus	Schedule-IV	
58	Bamboo Pit viper/ Green viper (Boda sapa)	Trimeresurus gramineus	Schedule-IV	
59	Russell's viper (Chandana boda sapa)	Viper russelli	Schedule-IV	
	<b>FAMILY:-ELAPIDAE (Poisonous Snakes)</b>			
60	Common Indian Krait (Chiti Sapa)	Bungarus Caeruleus	Schedule-IV	
61	Banded Krait (Rana Sapa)	Bungarus fasciatus	Schedule-IV	
62	Slender Coral snakeq	Calliophis melanurus	Schedule-IV	
63	Mono cellate/ Monocled cobra/ Tampa sapa	Naja Kaouthis	Schedule-II	
64	Binocellate / Speckled/ Common Cobra/ Indian Cobra/ Naga/Gokhura sapa	Naja Naja	Schedule-II	Appendix-II
65	Black Cobra/ Cellate Cobra Kala naga	Naja oxiana	Schedule-II	
66	King Cobra/ Hamadry/ Ahiraj	Ophiophgus Hannah	Schedule-II	Appendix-II

**LIST OF FISHER**

<b>SL. NO.</b>	<b>LOCAL NAME</b>	<b>SCIENTIFIC NAME</b>
1	Balia	<i>Wallagonic attu</i>
2	Bali garada	<i>Golossogobius giuris</i>
3	Bansa pati	<i>Ailia coha</i>
4	Bhakur	<i>Catla catla</i>
5	Chenga	<i>Ophniocephalus gachus</i>
6	Chital	<i>Notopterus chitala</i>
7	Danikiri	<i>Esomus dandrica</i>
8	Gadsa	<i>Ophinocephalus punctatus</i>
9	Jalanga	<i>Pangasius pangasius</i>
10	Kantia	<i>Myotus Cavasius</i>
11	Kerandi	<i>Barbus ambassis</i>
12	Kou	<i>Anabas tistidunes</i>
13	Magura	<i>Clarias batrachus</i>
14	Mirkali	<i>Cirrhinus mrigala</i>
15	Mahuralli	<i>Amblypharyngodon mola</i>
16	Neuli	<i>Gobiopterus chuno</i>
17	Pohala (Chuna)	<i>Cirrbina reba</i>
18	Pohala (Denga)	<i>Labeo bata</i>
19	Pabata	<i>Callichrous bimaaculatus</i>
20	Phali	<i>Notopterus notopterus</i>
21	Rohi	<i>Labeo rohito</i>
22	Serena	<i>Barbus serena</i>
23	Seula	<i>Ophinocephalus striatus</i>
24	Singi	<i>Heterophneustes fossils</i>
25	Todi	<i>Mastacembelus armatus</i>

**APPENDIX-11**

**LIST OF AMPHIBIANS**

1	Indian Toad	Bufo melanostictus	Common
2	Tree Frog	Rhacophorus lencamystax	Rare
3	Tree Frog	Rhacophorus maculates	Common
4	Tree Frog	Hyla arborea	Common
5	Paddy field frog	Rana limmocharis	Common
6	Skipping frog	Rana cyanophyctis	Common
7	Indian Bull frog	Rana tigrina	Rare

Sd/- 15.4.87

Addl. District Magistrate, Cuttack.

**APPENDIX -12**

**LIST OF INVERTEBRATES**

Some common invertebrates of sanctuary are listed below:

<b>Annelids</b>	<b>Earthworm</b>	<b>Phearetimasp</b>
<b>Insects</b>	<b>Crickets</b> :	<b>Gryllus limaculltus</b>
		<b>Taleogryllus</b>
		<b>testaceus</b>
	<b>Grasshoppers</b> :	<b>Aulacobothrus</b>
		<b>inclytus</b>
		<b>Eucoparacra</b>
		<b>praemorsa</b>
	<b>Butterfiles</b> :	<b>Hieraglyphus banian</b>
		<b>Euthails nais</b>
		<b>Precis almona</b>
	<b>Dragonfly</b> :	<b>Precis atbiles</b>
		<b>Pantala flavscens</b>
<b>Tholymis tillarga</b>		

<b>Termites</b>	<b>:</b>	<b>Orthetram sbina</b>
		<b>Odontotermes</b>
		<b>ellahunisensis</b>
		<b>Microtermes obesi</b>

**Snails of different types are also found  
Scorpions and centipeds are also commonly seen.**

<b>Mollusca, land gastropods</b>	<b>:</b>	<b>Achitina fulica</b>
		<b>Ariophanta iterrupta</b>
		<b>Rachis praetermissus</b>

**APPENDIX -13**

**LIST OF PLANTATIONS INDICATING YEAR OF ESTABLISHMENT,  
LOCATION EXTENT & SPECIES  
SATKOSIA WILDLIFE DIVISION**

Sl.No 1	Year of Plantation 2	Locality/RF 3	Area in Ha, Original 4
<b>BOLONGA</b>			
1	1959	Bolong-7	10.117
2	1960	Bolong-11	12.54
3	1961	Bolong-11	8.5
4	1962	Bolong-11	10.12
5	1963	Bolong-11	10.52
6	1981	Bolong-11	10
7	1982	Bolong-11	7
<b>RAIGODA</b>			
1	1929	Raigoda-6	1.012
2	1930	Raigoda-6	1.821
3	1931	Raigoda-6	1.821
4	1932	Raigoda-6	1.214
5	1933	Raigoda-6	1.619
6	1934	Raigoda-6	1.619
7	1935	Raigoda-6	3.035
8	1936	Raigoda-6	4.047
9	1937	Raigoda-6	5.261
10	1938	Raigoda-6	0.404
11	1939	Raigoda-15	0.404
12	1939	Raigoda-16	1.618
13	1940	Raigoda-11	4.856
14	1940	Raigoda-14	6.07
15	1940	Raigoda-11	3.237
16	1940	Raigoda-16	12.141

17	1940	Raigoda-14	1.66
18	1940	Raigoda-15	0.809
19	1941	Raigoda-16	6.07
20	1941	Raigoda-16	2.02
21	1941	Raigoda-11	2.43
22	1941	Raigoda-14	2.833
23	1941	Raigoda-11	2.02
24	1941	Raigoda-16	4.45
25	1941	Raigoda-16	8.9
26	1941	Raigoda-11	4.25
27	1941	Raigoda-15	4.047
28	1941	Raigoda-16	12.14
29	1946	Raigoda-4	1.416
30	1947	Raigoda-4	0.405
31	1947	Raigoda-6	1.235
32	1953	Raigoda-6	0.538
33	1954	Raigoda-4	2.832
34	1955	Raigoda-6	0.202
35	1956	Raigoda-6	2.832
36	1956	Raigoda-4	0.607
37	1956	Raigoda-10	0.023
38	1957	Raigoda-10	23.068
39	1958	Raigoda-10	10
40	1958	Raigoda-6	16.188
41	1960	Raigoda-15	2.023
42	1960	Raigoda-5	24.282
43	1962	Raigoda-14	20.235
44	1963	Raigoda-14	20.235
45	1964	Raigoda-14	36.423
46	1965	Raigoda-9	20.235
47	1965	Raigoda-16	10.117
48	1967	Raigoda-1	10
49	1967	Raigoda-16	10.117
50	1968	Raigoda-4	10.117
51	1969	Raigoda-2	20.235
52	1969	Raigoda-16	10.117
53	1970	Raigoda-16	12.141
54	1971	Raigoda-16	10.171
55	1973	Raigoda-16	10
56	1978	Raigoda-10	10
57	1979	Raigoda-6	8.00
58	1980	Raigoda-6	6.00
59	1981	Raigoda-6	8.00
60	1982	Raigoda-4	4.00
61	1982	Raigoda-6	4.00
62	1983	Raigoda-15	12.00
63	1984	Raigoda-14	8.00

64	1984	Raigoda-15	8.00
65	1984	Raigoda-16	21.00
		<b>KURU</b>	
1	1928	Kuru-1	1.112
2	1929	Kuru-1	0.526
3	1929	Kuru-3	1.011
4	1930	Kuru-3	1.018
5	1931	Kuru-3	1.678
6	1932	Kuru-3	1.577
7	1933	Kuru-1	1.011
8	1933	Kuru-3	5.201
9	1934	Kuru-3	12.849
10	1935	Kuru-1	8.094
11	1936	Kuru-1	11.175
12	1937	Kuru-1	3.642
13	1938	Kuru-1	2.023
14	1939	Kuru-1	1.618
15	1940	Kuru-9	2.023
16	1943	Kuru-5	10.522
17	1946	Kuru-5	2.832
18	1947	Kuru-4	0.708
19	1948	Kuru-4	2.63
20	1958	Kuru-9	1.011
21	1960	Kuru-6	10.117
22	1961	Kuru-7	12.141
23	1963	Kuru-7	10.117
24	1964	Kuru-2&3	8.094
25	1965	Kuru-3	12.141
26	1965	Kuru-9	10.117
27	1966	Kuru-3	12.141
28	1967	Kuru-3	20.235
29	1967	Kuru-6	20.235
30	1968	Kuru-6&5	16.188
31	1968	Kuru-3	6.07
32	1969	Kuru-7	30.352
33	1969	Kuru-5	12.141
34	1970	Kuru-3	14.164
35	1971	Kuru-6	12.141
36	1972	Kuru-6	2.823
37	1972	Kuru-4	18.774
38	1972	Kuru-5	14.569
39	1973	Kuru-4	2.823
40	1973	Kuru-9	2.861
41	1974	Kuru-9	14.164
42	1982	Kuru-9	6

### CHHOTAMUNDA

1	1926	Chhotamunda-3	4.047
2	1928	Chhotamunda-3	0.485
3	1929	Chhotamunda-3	0.607
4	1930	Chhotamunda-3	3.237
5	1931	Chhotamunda-3	1.112
6	1932	Chhotamunda-3	2.225
7	1933	Chhotamunda-3	1.612
8	1936	Chhotamunda-3	2.832
9	1937	Chhotamunda-3	3.237
10	1938	Chhotamunda-3	4.047
11	1939	Chhotamunda-3	2.023
12	1944	Chhotamunda-3	2.832
13	1944	Chhotamunda-3	1.618
14	1945	Chhotamunda-3	2.428
15	1945	Chhotamunda-3	4.451
16	1949	Chhotamunda-3	0.404
17	1959	Chhotamunda-3	6.07
18	1959	Chhotamunda-3	14.165
19	1960	Chhotamunda-3	10.117
20	1961	Chhotamunda-3	14.569
21	1963	Chhotamunda-3	10.117

### TAINSI

1	1939	Tainsi-4	2.023
2	1940	Tainsi-4	2.023
3	1941	Tainsi-4	1.011
4	1957	Tainsi-1	22.663
5	1958	Tainsi-1	16.188
6	1962	Tainsi-2	16.188
7	1962	Tainsi-9	14.569
8	1964	Tainsi-2	38.446
9	1965	Tainsi-2	28.328
10	1966	Tainsi-2	20.235
11	1967	Tainsi-2	20.235
12	1968	Tainsi-2	28.235
13	1969	Tainsi-5	8.094
14	1970	Tainsi-5	30.352
15	1971	Tainsi-3	20.235
16	1971	Tainsi-4	14.164
17	1972	Tainsi-5	12.141
18	1978	Tainsi-3	10
19	1983	Tainsi-4	14
20	1984	Tainsi-4	12
21	1985	Tainsi-1	18
22	1986	Tainsi-2	20
23	1986	Tainsi-3	14
24	1987	Tainsi-2	16



25	1987	Tainsi-3	25.1
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**TULKA**

1	1934	Tulka-7	1.41
2	1935	Tulka-7	1.82
3	1936	Tulka-7	6.47
4	1937	Tulka-7	12.74
5	1938	Tulka-7	5.26
6	1939	Tulka-7	6.88
7	1940	Tulka-7	12.14
8	1941	Tulka-7	10
9	1942	Tulka-7	10
10	1943	Tulka-7	7.258
11	1961	Tulka-8	34
12	1962	Tulka-9	20.235
13	1963	Tulka-9	20.235
14	1964	Tulka-8	22.25
15	1965	Tulka-8	10
16	1967	Tulka-12	10.117
17	1967	Tulka-11	10.117
18	1968	Tulka-9	10.117
19	1969	Tulka-9	10.117
20	1970	Tulka-9	2.023
21	1971	Tulka-9	12.141
22	1973	Tulka-12	12.141
23	1973	Tulka-9	12.00
24	1978	Tulka-12	12.00
25	1979	Tulka-2	12.00
26	1981	Tulka-4	26.00
27	1983	Tulka-2	10.00
28	1986	Tulka-3&7	10.00
29	1987	Tulka-2	12.00
30	1987	Tulka-6	0
31	1988	Tulka-1&6	11.00
32	1988	Tulka-4	12.00

**TAKARSINGHA**

1	1938	Takarsingha-2	2.428
2	1939	Takarsingha-2	4.047
3	1959	Takarsingha-2	22.379
4	1960	Takarsingha-2	5.261
5	1962	Takarsingha-2	10.117
6	1963	Takarsingha-2	10.117
7	1965	Takarsingha-2	10.117
8	1971	Takarsingha-2	22.258
9	1974	Takarsingha-2	16.188
10	1977	Takarsingha-2	14.973

11	1986	Takarsingha-1	20
12	1987	Takarsingha-3	19
13	1988	Takarsingha-3	19

### PURUNAKOTE

1	1937	Purunakote-4	0.8
2	1937	Purunakote-4	0.41
3	1940	Purunakote-7	4.047
4	1940	Purunakote-7	8.094
5	1941	Purunakote-7	5.665
6	1941	Purunakote-7	2.428
7	1941	Purunakote-6	2.02
8	1941	Purunakote-6	0.4
9	1941	Purunakote-7	1.416
10	1941	Purunakote-7	2.023
11	1942	Purunakote-16	21.44
12	1943	Purunakote-15	8.29
13	1949	Purunakote-15	3.03
14	1950	Purunakote-15	0.4
15	1951	Purunakote-15	0.4
16	1952	Purunakote-7	1.21
17	1953	Purunakote-7	3.23
18	1959	Purunakote-16	6.47
19	1959	Purunakote-15	10
20	1960	Purunakote-16	10
21	1961	Purunakote-15,16	16
22	1961	Purunakote-15	4
23	1962	Purunakote-16	22.25
24	1963	Purunakote-16	20
25	1964	Purunakote-15	20
26	1964	Purunakote-7	10
27	1965	Purunakote-6	10
28	1966	Purunakote-6	10
29	1967	Purunakote-6	10.73
30	1967	Purunakote-6	6.07
31	1968	Purunakote-16	14.16
32	1970	Purunakote-7	10
33	1973	Purunakote-7	6.47
34	1977	Purunakote-7	2.22
35	1978	Purunakote-7	7.84
36	1979	Purunakote-8	14
37	1979	Purunakote-15	11
38	1979	Purunakote-9	2
39	1980	Purunakote-9	6.04
40	1981	Purunakote-9	4
41	1981	Purunakote-8	16
42	1981	Purunakote-7	15

**MAJHIPADA**

1	1937	Majhipada-14	0.404
2	1937	Majhipada-15	1.618
3	1938	Majhipada-15	0.404
4	1938	Majhipada-15	12.14
5	1938	Majhipada-15	0.808
6	1938	Majhipada-14	16.188
7	1939	Majhipada-14	10.117
8	1939	Majhipada-15	7.689
9	1941	Majhipada-14	10.117
10	1955	Majhipada-15	2.023
11	1983	Majhipada-12	33.4
12	1984	Majhipada-12	8
13	1985	Majhipada-10	32
14	1987	Majhipada-10	7.3
15	1988	Majhipada-11	12
16	1988	Majhipada-15	20

**TIKARPADA**

1	1940	Tikarpada-5	3
2	1941	Tikarpada-5	0.6
3	1941	Tikarpada-5	1.618
4	1942	Tikarpada-5	4.249
5	1956	Tikarpada-5	3.786
6	1969	Tikarpada-5	3.8
7	1983	Tikarpada-6	20
8	1984	Tikarpada-6	16
9	1985	Tikarpada-6	16
10	1986	Tikarpada-7	12
11	1987	Tikarpada-6	30.2
12	1988	Tikarpada-7	20.2
13	1988	Tikarpada-7	20

**KATRANG**

1	1943	Katrang-11	1.618
2	1946	Katrang-1	1.214
3	1946	Katrang-7	2.832
4	1946	Katrang-11	1.41
5	1947	Katrang-3	3.327
6	1947	Katrang-11	6.07
7	1984	Katrang-1	11
8	1985	Katrang-7	10
9	1985	Katrang-8	14
10	1986	Katrang-2	10
11	1986	Katrang-2	5
12	1986	Katrang-2	22
13	1987	Katrang-2	4
14	1988	Katrang-2	20

<b>JOCOB</b>			
1	1967	Jacob-2	24.282
2	1968	Jacob-2	6.07
3	1970	Jacob-6	8.094
4	1978	Jacob-6	2
<b>BAGHAMUNDA</b>			
1	1943	Baghamunda-7	0
2	1975	Baghamunda-9	15.36
3	1975	Baghamunda-12	16.99
4	1978	Baghamunda-9	16
5	1979	Baghamunda-2	10
6	1980	Baghamunda-9	16
7	1983	Baghamunda-12	24
8	1983	Baghamunda-13	8
9	1985	Baghamunda-13	6.4
10	1985	Baghamunda-12	15
11	1985	Baghamunda-9	13
12	1985	Baghamunda-3	14
13	1985	Baghamunda-1	28
14	1986	Baghamunda-1	28
15	1987	Baghamunda-1	32.3
16	1988	Baghamunda-1	33
<b>MAHANADI WILDLIFE</b>			
1	1958	Mahanadi-8b	2
2	1959	Mahanadi-17b	12
3	1971	Mahanadi-5b	10
GRAND TOTAL	SATKOSIA W.L. DIVISION = 2705.96HA, MAHANADI W.L. DIVISION HA		

**APPENDIX-14**

OFFICE OF THE COLLECTOR, CUTTACK

NO. \_\_\_\_\_/LR Dt.

From

The Addl. District Magistrate, Cuttack.

To

The Deputy Secretary to Government, Forest Fisheries & A.H.Deptt., Bhubeneswar.

Sub:- Determination of rights of the persons if any within the limits of Satakosia George Sanctuary u/s 19 to 26 of the W.L. protection Act.1972.

Ref:- Your letter No. 20373 dt. 21.6.86 & this office letter No. 82 dtd. 15.8.86.

Sir,

In response your letter on the subject cited above, I am to inform you that, the a proclamation in regional language as per section 21 of W.L. protection Act, 1972 has been issued by Collector, Cuttack inviting claims or objections in the concerned villages of Cuttack District which comes under Satakosia George Sanctuary. No objection has been received from any person or institution. The F.S.O., Cuttack was authorized to enquire and determine the existence, nature and extent of the rights enjoyed by persons living in villages in and around the sanctuary within the District of Cuttack. Accordingly the F.S.O. enquired it & discussed with Tahasildar, Narsinghpur, B.D.O., Narsinghpur , Chairman, Narsinghpur & Sarpanch of concerned G.Ps regarding existence of any rights or Sairat sources coming under the Satkosia George Sanctuary. But they have no objection.

I would therefore request you to take further action as per W.L. protection Act, 1972 for the purpose of protecting and developing wildlife.

Yours faithfully

Sd/-

Addl. District Magistrate, Cuttack.

Memo No. \_\_\_\_\_/ LR Dt.

Copy forwarded to D.L.R. & S. Board of Revenue ,Orissa Cuttack for favour of information & necessary action.

Sd/-

Addl. District  
Magistrate, Cuttack.

**DISTRICT OFFICE , NAYAGARH**

No. \_\_\_\_\_/Dt.

From

Jamil Ahmmed Khan, IAS  
Collector & D.M. Nayagarh.

To

The Principal Chief Conservator of Forests (Wildlife) and Chief Wildlife Warden, Orissa, 5<sup>th</sup> floor B.D.A. Apartment, Pakrutibhaban, Nilakanthnagar, Nayapali, Bhubaneswar-751012..

Sub:- Request for submitting enquiry reports for issuing final Notification of Satkosia Gorge Sanctuary.

Ref:- Your letter No.3061 dt.26.4.2006.

Sir,

With reference to the letter on the subject cited above, I am to inform you that on behalf of Collector, Nayagarh the Forest Settlement Officer appointed by Government was authorized to enquire in the settlement of rights u/s 19, 24 and 25 of Wildlife Protection Act, 1972 of Satkosia Gorge Sanctuary in respect of Nayagarh District.

As per the sketch map and village list submitted by the D.F.O., Nayagarh vide letter No.4774 dt.19.6.80 a case records was opened by F.S.O. and proclamation was issued u/s.21 of the Wild Life Protection Act, 1972. Subsequently 33 numbers of applications were received before F.S.O. regarding settlement of right. After due enquiry it is seen that all these applications except one were rejected as because the area mentioned by the applications are not within Sanctuary boundary. The rest one application filed by Sarapanch, Chhamundia was fixed for enquiry by the F.S.O. on 4.1.05. At the time of enquiry by F.S.O. with A.C.F. Mahanadi WL division, Nayagarh on 4.1.05 the applicant was found absent and the F.S.O. visited the villages within the Sanctuary area and submitted the report on F.S. Case No.1/85 on Dt.4.1.2005. On perusal of the report of F.S.O. it is ascertained that the villagers namely Malasahi, Badmul, Bethiasahi, Muduligadia, Kandhajilinda, Chhamindia, Haripur, Kanipokhari, Bentapada, Iswarpur, Maskajholi, Raigadia, Mahanpada, Dasipur, Rajingi, Dhobaborei, Kumbirkhani, Salapaganda, Musuguda, Malasapadar, Sagadbhanga and Bahali are situated adjacent to the boundaries of the Sanctuary. Village Kuturi is situated by the side of the old Jagannath Sadak which is situated near about 4 K.M.s away from the boundary. All the inhabitants of the villages mentioned supra are residing since last more than fifty years as ascertained from field enquiry.

The A.C.F. who was present at the time of enquiry suggested that the villages are not creating any problems for Sanctuary. Moreover, they have no adequate funds to displace the inhabitants by acquiring lands as per the provision of land acquisition Act. They can simply enjoy the right, title and interest of their own land as per their practice and they will just observe the principles of wildlife protection Act.

Hence, it is suggested that after final demarcation of land by Tahasildar Dasappa the proposal will be moved u/s-26-A of the Act.

Yours faithfully,

Sd/-

Collector, Nayagarh

Memo No. 1401(51) dt.7.9.06

Copy forwarded to Conservator of Forests, Angul Circle /Bhubaneswar Circle/D.F.O. Satkosia Wildlife Division, Angul /D.F.O. Mahanadi WL Division, Nayagarh /D.F.O. Nayagarh for information and necessary action.

Sd/-

Collector, Nayagarh

**OFFICE OF THE COLLECTOR, B OUDH**

**No. 7706 /FS. Date 21.8.98  
FS-II-2/98**

From: Sri R.N.Padhi, I.A.S.  
Collector, Boudh.

To

The Principal Chief Conservator of Forests (Wildlife) and  
Chief Wildlife Warden, Orissa, Bhubaneswar.

Sub:- Settlement of rights etc. in ' Satkosia George Sanctuary' and final Notification  
under Wildlife Protection Act, 1972.

Sir,

In inviting a reference to your letter on the subject cited above I am to say that a case bearing No.1/98 has been instituted under the provisions of Wild Life (Protection) Act, 1972 for declaration of Satakosia George Sanctuary which covers an area of Ac.8347.87 of revenue land of Boudh district. The proposed Satkosia George Sanctuary has been notified vide Notification No.4F(W)33/76-12727 dated 19<sup>th</sup> May, 1976 of Government of Orissa in F.F.&A.H. Department. The proclamation u/s 21 of the Wild Life (Protection) Act, 1972 was issued by the Collector, Phulbani on 3.3.1987. Since no action u/s 19 to 25 could be taken for non receipt of case records from the undivided Phulbani district, fresh case record bearing No.1/98 has been instituted and fresh proclamation inviting objection u/s 21 of the Act has been issued on 1.5.1998.

As per the original notification the boundary of Satakosia George Sanctuary starts from the junction of river Mahanadi and Badajore Nalla in Harabhanga P.S. of Boudh district and runs along the Nalla till it meets the 'Hatidhara' reserve forest boundary line, and follows in north-eastern direction till it meets the district boundary line of Nayagarh district. Then it proceeds towards East-northern direction till it meets the river Mahanadi touching the inter-district boundary line of Nayagarh and Angul district. As per the sketch map of Satakosia George Sanctuary area furnished by the Tahasildar, Boudh it covers the following 17 villages of Boudh district having a total population of 3373 with 2542.85 Ac of rayati land and 5805.02 Ac. Of Govt. land.

	Village	Population	Rayati land	Govt. land	Total
1.	Kumari	987	616.24	1222.26	1838.50
2.	Hastigarh	200	160.61	62.57	223.18
3.	Bhabapur	328	287.18	237.86	525.04
4.	Atalasara	240	190.92	864.26	1055.18
5.	Budhamba	95	43.47	148.98	192.45
6.	Ghungurupada	87	177.58	173.87	351.45
7.	Nuapada	164	149.83	89.63	239.46
8.	Semiguda	16	38.04	109.24	147.28
9.	Sripaju	125	50.05	276.26	326.31
10.	Geridisahi	209	153.84	413.42	567.26
11.	Hinjal	142	122.65	151.75	274.40
12.	Satakhanda	487	379.97	582.08	962.05
13.	Kutibari	218	152.46	199.65	352.11
14.	Sitalpani	36	8.37	728.05	736.42
15.	Marda	39	11.64	62.36	74.00
16.	Sunakhania	Nil	Nil	32.09	32.09
17.	Ghatagaon	Nil	Nil	450.69	450.69
	Total	3373	2542.85	5805.02	8347.87

On the proclamation issued u/s 21 of the Act on 1.5.98 inviting objection, as many as 582 objections / claim petitions were received from 15 villages within the stipulated period of two months i.e. by 30.6.98. No objection was received from the village Sunakhania and Ghatagaon as these villages are uninhabited. The report of the Forest Settlement Officer, Boudh on the joint verification of boundary line as required u/s 19 of the Act was received on 24.7.98. Individual notices were issued to all persons concerned to appear on 6.8.98 and 7.8.98 at the camp Court of the Collector, Boudh at Kusanga for hearing of objections as required u/s 22 of the said Act. Tahasildar, Boudh, D.F.O. (Territorial), Boudh were also informed to be present during the hearing of objections. Accordingly, camp Courts were held by the Collector, Boudh on 6.8.98 and 7.8.98 at Kusanga for hearing of objections. The Additional Tahasildar, Boudh, Forest Settlement Officer, Boudh, Revenue Inspector, Harabhanga and D.F.O.(T), Boudh were also present at the time of hearing of objections.

On 6.8.98, I visited the village Kumari, Hatigarh, Bhabapur, Marda, Atalasara and Sitalpani along with DFO(T), Boudh, Addl. Tahasildar, Boudh and Forest Settlement Officer, Boudh and discussed with the villagers regarding declaration of Sastakosia George Sanctuary. The villagers of Kumari, Hatigarh and Bhabapur requested for exclusion of their villages from the proposed sanctuary area as these villages are far away from the reserve forest area. These three villages are situated 1 to 2 K.M. away from the reserve forest and there is hardly any forest growth within the vicinity of these villages. Further these three villages are fairly big villages having a population of 1515 and total land of Ac.2586.72 (both Govt. and private land). These villages also do not pose any danger to



the interest of the wild life and hence it was decided to exclude these three villages from the proposed sanctuary area. The DFO(T) Boudh who was present at the time of hearing of objection and field visit also agreed to the proposal for exclusion of these villages from the proposed sanctuary area. The detailed land particular and population of these three villages are as follows:

Name of the village	Population	Rayati land	Govt land	Total
1. Kumari	987	616.24	1222.26	1838.50
2. Hatigarh	200	160.61	62.57	223.18
3. Bhabapur	328	287.18	237.86	525.04
Total	1515	1064.03	1522.69	2586.72

After exclusion of the above three villages the remaining 14 villages comprising a population of 1858 and total land of Ac.5761.15 (1478.82 rayati land and 4282.33 of Govt. land) will come within the limit of the proposed sanctuary. Accordingly, a fresh sketch map showing the revised proposed sanctuary area excluding the above mentioned 3 villages has been prepared, a copy of which is attached herewith.

As per the provisions of section 24 of the Wild Life (Protection) Act, 1972 compensation will have to be paid for Ac.1478.82 of rayati land coming within the proposed sanctuary area. Further the compensation towards the cost of houses/ buildings and trees standing on the said land is required to be paid to the affected persons. The detailed calculation is given below:

Value of :-

(a)	Houses Ac.1479 @ Rs.35,000/- per Ac.	Rs.	5,17,65,000/-
(b)	Trees 25000 nos @ Rs.1200/- each	Rs.	3,00,00,000/-
(c)	Wells 40 nos. @ Rs.25,000/- each	Rs.	10,00,000/-
(d)	Tanks 10 nos. @ Rs.40,000/- each	Rs.	4,00,000/-
	Total	Rs.	8,31,65,000/-
1.	Market value of land under section 23(1) Clause(1) Total (a)(b)&(c) above. 12%	Rs.	1,65,69,800/-
2.	Additional compensation u/s 23(2) of the percent on (1) above. 30%	Rs.	4,14,49,500/-
	Total	Rs.	14,11,94,300/-
3.	Capitalized value of Govt. revenue (LR x 25)	Rs.	5,76,225/-
4.	Cost of establishment and contingent charges. 20%	Rs.	2,82,38,860/-
5.	Total	Rs.	17,00,09,385/-

Thus approximately an amount of Rs.17.00 Crores will be required towards payment of compensation of houses / buildings / trees etc. to the affected persons. Further 372 families involving a population of 1858 pertaining to the above 14 villages will be displaced and there is necessity for their habitation. Action will be taken for acquisition of private land under the provisions of Land Acquisition Act after final decision regarding declaration of the 'Satakosia George Sanctuary' is taken by Government of Orissa.

Yours faithfully,

Sd/-  
Collector, Boudh.

Memo No. \_\_\_\_\_/F.S. Date.

Copy submitted to the Revenue Divisional Commissioner (Southern Division), Orissa, Berhampur for favour of information and necessary action with reference to his D.O.No.323 dt.6.8.1998.

Sd/-  
Collector, Boudh

**APPENDIX-17**

**OFFICE OF THE COLLECTOR: BOUDH  
(FOREST SETTLEMENT)**

**No. 10999/FSD.**

**Dt. 30.11.98**

From:

Shri Rathindra Nath Padhi, I.A.S.  
Collector, Boudh.

To

The Principal Secretary to Government of Orissa,  
Forest and Environment Department, Orissa, Bhubaneswar,

Chief Conservator of Forests (Wildlife ) and Chief Wild Life warden, Orissa,  
Bhubaneswar.

Sub:- Settlement of rights etc. in Satkoshia George (Wild Life) sanctuary under Wildlife Protection Act, 1972.

Sir,

In continuation of this office letter NO.7706/F.S.11.2/98. dt.21.8.98 on the subject cited above, I am to say that proposal has been submitted earlier for exclusion of these villages namely Kumari, Hatigarh and Bhabapur from the limit of the Satkoshi George Sanctuary out of the 17 villages notified in preliminary Notification No.4F/W/33/76-1277/19.5.96.

During last Collector's conference held on 30.8.98 it was decided that only core villages will be included within the proposed sanctuary area and the periphery villages should be excluded in order to avoid complications like acquisition of land and rehabilitation of the displaced persons. Accordingly a further joint inspection was made by Asst. Conservator of Forests (T) Boudh and Forest Settlement Officer, Boudh to ascertain the periphery villages of the proposed sanctuary area and they have submitted a report for exclusion of 10 more villages from the proposed sanctuary area.

According to the preliminary notification, the proposed sanctuary area is comprised of Padmatola Reserve Forest, Nandacadu Protected Forest and some plantation, forest growth and 17 Revenue villages as follows.

1. Kumari, 2. Bhabapur, 3. Ghungurumunda, 4. Hatigarh, 5. Budhamaba, 6. Nuapada, 7. Semiguda, 8. Sripaju, 9. Geridisahi, 10. Hinjal, 11. Satakhanda, 12. Kutibari, 13. Atalsara, 14. Sitalpani, 15. Sjnakhania, 16. Ghatagaon, 17. Marda.

According to the joint inspection report of Asst. Conservator of Forests (T) Boudh and Forest Settlement officer, Collectorate, Boudh, out of the above 17 Revenue villages, the following 13 villages are situated at the periphery of proposed Satkoshia George (Wildlife) sanctuary area.

1. Kumari, 2. Bhabapur, 3. Ghungurumunda, 4. Hatigarh, 5. Budhamba, 6. Nuapada, 7. Semiguda, 8. Sripaju, 9. Geridisahi, 10. Hinjal, 11. Satakhanda, 12. Kutibari, & 13. Atalsara.

The land particulars and populations of these 13 villages are as follows:

Name of the village		Population	Rayati land	Govt land	Total area		
1.	Kumari	987	616.24		1222.26	1838.50	
2.	Hatigarh	200	160.61	61.57	223.18		
3.	Bhabapur	323	287.18	237.86	525.04		
4.	Budhamba	95	43.47	148.98	192.45		
5.	Ghungurumunda	87	187.58	173.87	351.45		
6.	Nuapada	164	149.83	89.63	239.46		
7.	Semiguda	16	38.04	109.24	147.28		
8.	Sripaju	125	50.05	276.26	326.31		
9.	Geridisahi	209	153.84	413.42	567.26		
10.	Hinjal	142	122.65	151.75	274.40		
11.	Satakhanda	487	379.97	582.08	962.05		
12.	Kutibari	218	152.46	199.65	352.11		
13.	Atalsara	240	190.92	864.26	1055.18		
	Total	3298	2522.84	4531.83	7054.67		

Thus after exclusion of the above thirteen periphery villages, there remains only 4 (four) core villages comprising a population of 75 and total land of Ac.1293.20 (Ac.20.01 of Rayati land and Ac.1273. of Govt. land) which come within the limit of the proposed sanctuary. The details of above 4 villages are as follows:

Name of village	Population				Rayati land	Govt land	Total
	SC	ST	GE N	Total			
1. Sitalpani	7	5	14	26	8.37	728.05	736.42
2. Marda	49	-	-	49	11.64	62.36	74.00
3. Sunakhania	-	-	-	-	-	32.09	32.09
4. Ghatgaon	-	-	-	-	-	450.69	450.69
Total	56	5	14	75	20.01	1273.19	1293.20

It may be mentioned here that out of the 4 (four) villages, 2 villages viz. Sunakhania and Ghatagaon are uninhabited. A fresh sketch map showing the revised proposed sanctuary areas has been prepared, a copy of which is sent herewith.

As per the provision 24 of the wildlife (Protection) act 1972 compensation will have to be paid for Ac.20.01 of Rayati land coming within the proposed sanctuary area. The details of the compensation towards the cost of dwelling houses, well, tank and trees standing on the said land as per the preliminary report are given below.

1.	Value of private land Ac.20.00 @ 25000/-P.A.	Rs.	5,00,000.00
2.	Houses 15 nos. @ 50000/- P.home	Rs.	7,50,000.00
3.	Trees 480 nos. @ 1200/- each	Rs.	5,76,000.00

4.	Well 6 nos. @ 25,000/- each	Rs.	1,50,000.00
5.	Tanks 2 nos. @ 40,000/- each	Rs.	80,000.00
	Total	Rs.	20,56,000.00
A.	Market value of land under section 23(i) clause(i) Total (a)(b)(c) above 12%	Rs.	24,720.00
B.	Additional compensation under section 23(ii)of the percent on (a) to (a) above 30%	Rs.	61,680.00
C.	Capitalised value of Govt. revenue (LR x 25)	Rs.	7,140.00
D.	Cost of Establishment and contingent charges 20%	Rs.	41,120.00
	G. Total	Rs.	21,90,660.00
		or	Rs. 21,91,000.00

Thus, approximately an amount of Rupees 22 lakhs will be required towards payment of compensation of house / building/ trees etc. to the affected persons. Further about 15 families involving a population of 75 pertaining to two villages viz. Sitalpani and Marda will be displaced for which alternative site has to be selected for their rehabilitation.

Action will be taken for acquisition of private land under the provisions of land Acquisition Act after final decision regarding declaration of the Satkosha George sanctuary is taken by Government of Orissa.

Yours faithfully,  
Sd/-  
Collector, Boudh

**APPENDIX-18**

**DISTRICT OFFICE: ANGUL  
(FOREST SETTLEMENT)**

**No. 1188 /**

**Dt. 24.7.98**

To

*The Principal Secretary to Government,  
Forest and Environment Department,  
Orissa, Bhubaneswar,*

Sub:- *Writ petition (Civil) No.337/95-Centre for Environmental Law-WWF-1-Vrs-Union of India and others.*

Ref:- *F & E Deptt. Letter No.20370 dt.6.10.95 and subsequent reminders ending with NO.11709 dt.11.6.98.*

Sir,

Inviting reference to the subject cited above I am to say that the list of 32 Revenue villages and 3 forest villages that are coming inside the 'Satakosia Gorge Sanctuary' was furnished by the D.F.O. Wild Life, Angul vide his letter No.1070 dt.12.8.96 for necessary action under section 19 to 25 of the Wildlife (Protection) Act, 1972, subsequent to issue of Notification No.12727 dated 19<sup>th</sup> May 1976 by the Forest, fisheries & Animal Husbandry Deptt., under section 18 of the said Act.

Accordingly, proclamation was issued for all the 35 villages, inviting objections of the villagers individually as regards determination / settlement of their rights and claims inside the 'Satakosia Gorge sanctuary' area. The objections received in this regard were heard by conducting camp courts at four different places and village wise case records have been processed wherein the position of each individual village funds place for appropriate action for issue of final notification on the Sanctuary. For hearing of objections the village has been taken as an unit as their objections are almost identical and common in nature.

Tharty five villages as per list supplied by the D.F.O. Wild Hife, Angul has practically been reduced to 33 as (1) Regadisahi under Athamallii Sub-Division happens to be the hamlet of Revenue Village Luhasinga, having no separate entity and (2) there is no revenue or foresp village namely 'Kumbh!rbhuin' available in the revenue records and concerned area of the District. However during the Camp Court at agannathpur the villagers stated that they hav% some landed property at Kumbharbhuin and they very often go there to watch their crop and stay there. As such, any scope for action u/s 19 to 25 of the Act, does not arise in respect of these two inadvertently reported villages.

Out of remaining 33 villages, 30 are revenue villages and 3 are forest villages. OF the revenue villages, 21 villages relate to Angul Sub-Division and 9 to Athmallik Sub-Division. These nine villages of Athamallik Sub-Division though coming under the sanctuary are located in a contiguous patch of land measuring Ac.2458.82, at the extreme south-west part of the sanctuary. If t`is part of the sanctuary consisting of the village areas t!ken together is deleted from the proposal it would in no way be detrimental to the interest and functioning of the sanctuary.

So also, 20 revenue villages of Angul Sub-Dirision that are coming inside the sanctuari are mostlq situated by the side of Angul-Tikarapada main road. The villagers are very much sentimental against any possible shifting of the villages elsewhere as they enjoy the basic amenities in the field of agriculture, health, edecatikn and communication as well. These 20 villages, if allowed to remain as they are, subject to fuhfillmenp of

conditions as laid down in the W.L.(P)Act, it may not affect the normal function of the Sanctuary.

Only one village i.e. Raigoda of Angul Sub-Division is situated at a distant interior, amidst deep reserve forests with no suitable communication. The villagers incur regular loss of crop due to attack by the wild animals like elephants and deer etc. and live in a totally unhealthy surrounding. As such, the villagers wanted that this village be shifted to a suitable alternate site, preferably to a roadside area with necessary rehabilitation assistance and on payment of due compensation towards their land and property.

Besides, 3 forest villages namely 1. Tarava, 2. Bhrukundi and 3. Asanbahal are coming inside the sanctuary. The villagers have no land of their own as revealed from the revenue records. They reside over the forest land provided to them by the Forest Deptt. since the year 1910 and 1914, as forest labourers. Action is on to declare these villages as revenue villages. Necessary proposals have been submitted by the D.F.O., Angul to higher quarters for de-reservation of the concerned forest areas as required under section 2 of the F.C. Act. Equal extent of non-forest land has been identified and intimated to the D.F.O. for raising compensatory afforestation in lieu of that. Hence, pending finalization of formation of revenue villages the involving area of these three forest villages, measuring Ac.534.69 as per field verification report of the D.F.O., Angul, may also be excluded from the sanctuary.

A list containing details of the land particulars is enclosed herewith for favour of your ready reference.

In view of the facts stated above, necessary recommendation has been made in the concerned case records for:

1. Total deletion of 9(nine) villages of Athmallik Sub-Division, measuring Ac.2458.82 from the Sanctuary area.
2. Exclusion of Ac.12701.19 from the sanctuary i.e. total area of 20 villages of Angul Sub-Division.
3. Exclusion of Ac.534.69 from the sanctuary, being the area of three forest villages that are to be declared as revenue villages.
4. Acquisition of Ac.162.28 of land in village Raigoda, through Land Acquisition proceedings for shifting of the village to a new site with rehabilitation benefits as per norms of Water Resources Rehabilitation & Resettlement plan.
5. Since I am recommending for exclusion of Ac.15,694.70 area from the sanctuary equal or more extent of reserved forest area adjacent to the sanctuary having no human habitation may be included in the sanctuary.

I am therefore to submit herewith 34 (thirty-four) case records bearing No.1/97 and 1/98 to 33/98 for favour of necessary action for issue of final notification on Satakosia Gorge Sanctuary with regard to orders of Hon'ble Supreme Court of India in Writ petition (Civil) No.337/95. The receipt of the case records may kindly be acknowledged.

Yours faithfully,  
Sd/-  
Collector, Angul

**STATEMENT SHOWING THE LAND UNDER DIFFERENT CATEGORIES WHICH COMES WITHIN THE PROPOSED AREA OF SATAKOSIA GORGE SANCTUARY**

Sl. No.	PS No.	Name of the village	Gochar land (in Ac)	Pvt Agril land incl. private waste land (in Ac)	Govt waste land in Ac	Gramya jungle (in Ac)	Other Communal land (in Ac)	Total land (in Ac)
1		Luhasinga	24.21	490.110	8.37	46.88	0.000	569.57
2		Nilamara	1.83	101.390	0.00	0.98	0.000	104.2
3		Kadasinga	5.94	98.160	3.24	12.44	0.130	119.91
4		Malisahi	2.05	130.420	0.61	14.12	0.000	147.2
5		Jamuduli	20.05	258.080	196.13	41.20	0.000	515.46
6		Dolamundai	8.90	108.440	0.32	0.25	0.000	117.91
7		Karadasinga	7.05	156.680	1.77	3.36	0.000	168.86
8		Limbadihi	4.85	282.340	0.70	7.60	0.000	295.49
9		Dharuha	17.75	369.700	2.12	30.65	0.000	420.22
10.a	78	Katrang (Bada)	88.39	217.510	51.91	603.30	20.830	981.94
10.b	89	Katrang (Sana)	0.00	0.000	0.00	33.54	83.420	116.96
11	69	Hatibari	11.10	224.100	19.54	418.91	21.880	695.53
12	70	Karadapada	15.91	218.200	4.25	94.37	35.170	367.9
13		Gahirpada (Raminunda)	70.00	229.660	3.75	971.91	2.450	1277.77
14	76	Gaindi	10.99	86.550	0.37	23.20	83.340	204.45
15	73	Majhipada	35.27	236.600	1.69	571.37	107.790	952.72
16	74	Beherasahi	16.89	116.220	4.12	383.29	67.250	587.77
17	77	Tikarapada	4.48	123.000	12.57	124.97	110.750	375.77
18	60	Badakheta	5.20	45.010	0.08	161.50	11.190	222.98
19	61	Salara	20.95	64.410	13.03	200.49	9.070	307.95
20	67	Purunakote	45.03	342.790	9.77	394.17	93.810	885.57
21	66	Gopalpur	0.00	141.420	7.79	184.70	15.900	349.81



22	65	Chhotakei	32.96	287.945	19.62	168.42	70.775	579.72
23	64	Tuluka	35.94	206.530	6.77	231.31	22.880	503.43
24		Tarava Forest village	0.00	0.000	0.00	0.00	0.000	0.000
25		Bhrukundi Forest vill	0.00	0.000	0.00	0.00	0.000	0.000
26	25	Pampasara	19.64	125.710	42.16	213.95	24.640	426.1
27	26	Hisrida	16.79	201.720	3.95	133.42	30.520	386.4
28	30	Jagarnathpur	63.94	779.390	2.46	779.65	76.440	1701.88
29	29	Takarsinga	114.74	397.710	25.46	298.70	22.190	858.8
30	62	Jokub	26.62	157.100	3.82	268.22	24.980	480.74
31	27	Kulangi	39.44	163.370	2.46	223.35	8.380	437
32		Asanbahal Forest vill.	0.00	0.000	0.00	0.00	0.000	0.0
***	Total	***	766.91	6360.265	448.83	6640.22	943.785	15160.01

**APPENDIX-19**

**HUMAN AND LIVESTOCK POPULATION OF VILLAGES SITUATED  
INSIDE THE SANCTUARY  
( SATKOSIA WILDLIFE DIVISION)**

Sl No	Range	Section	Beat	Name of village	Population Total	Cattle Population					Remarks
						Cow	Buffalow	Goat	Sheep	Total	
1.	Purunakote	Purunakote	Purunakote	Purunakote	751	344	194	319		857	
			Chhotkei	Chhotkei	454	183	126	267		576	
			Purunakote	Gopalpur	317	121	42	218		381	
		Jagannathpur	Jagannathpur	Jagannathpur	1091	787	212	375		1374	
			-do-	Salor	102	93		49		92	
			-do-	Badkheta	96	72	07	68		147	
		Tikarpara	Tikarapara	Tikarapara	709	296	62	164		522	
			Karadapada	Karadapada	83	171	86	103		360	
			-do-	Hatibari	418	186	58	241		485	
			-do-	Beherasahi	187	182	70	150		402	
			-do-	Gaindi	357	229	41	175		445	
			-do-	Ranimunda	80	37		02		39	

			Majhipada	Majhipada	251	205	23	253		481	
			Katranga	Katranga	357	169	118	222		509	
			Majhipada	Gohirapada	67	42	47	53		142	
			-do-	Doruha	204	72	98	220		390	
			-do-	Malisahi	188	87	50	200		337	
		Tikarpara	Naleswar	Jamudoli	729	352	88	429		865	
			-do-	Karadasingh	283	149	30	132		311	
			-do-	Nilamara	87	134	56	79		269	
			-do-	Dolamundei	191	97		09		106	
			-do-	Kulasinga	773	543	35	285		863	
			-do-	Tentulipada r	291	215	154	296		665	
			-do-	Limbadiha	488	216	133	207		556	
			-do-	Tentulipatha r	133	93	19	79		191	
2.	Pampasar	Pampasar	Beat	Pampasar	140	100		50		150	
		Labangi	Labangi	Jocub	140	55		40		95	
		-do-	Labangi	Labangi	95	46		48		94	
		Raigoda	Raigoda	Raigoda	87	81		67		148	
		Tulka	Tulka	Tulka	198	112		83		195	
			-do-	Bhurkundi	220	140		88		228	
		Pampasar	Pampasar	Hinsirida	546	215		179		394	

Sl No	Range	Section	Beat	Name of village	M	F	Populat ion Total	Cattle Population					Remarks
								Cow	Buffalo w	Goat	She ep	Total	
3.	Jilinda	Baliput	Kamaladiha	Kamaladiha	1184	1022	2206	724	220	335	15	1294	
				Baliput ( Siloti)	131	95	226	12		80	117	209	
				Ranibhuin	337	214	551	150	64	120	18	352	
				Mandania	122	119	241	139	75	101	20	335	
				Panchama	414	243	657	264	37	320	-	621	
				Kaintara	119	87	206	112	8	117	8	245	
				Nuagaon	150	101	251	162	28	180	20	390	
				Satyajaypur (Ambakhhol / Siaribhundi)	203	191	394	110	6	112	10	238	
				Paik Regeda	118	139	257	218	20	100	-	338	
				Talsahi	394	402	796	480	105	382	-	967	
				Regada	864	741	1605	1670	261	380	44	2355	
				Dhanajaypur	213	212	425	220	187	131	5	543	
				Kunjabanpur	103	117	220	90	16	10	5	121	
				Mahigarh	291	298	589	263	51	130	-	444	
				Sangaon	548	533	1081	301	155	155	20	631	

				Samapur	65	43	108	66	25	90	20	201		
				Janisahi	583	533	1116	389	58	220	75	742		
				Jillinda	920	931	1827	1414	120	420	47	2001		
				1.Basantpur	336	332	668	407	36	120	25		5 cluster village i.e. 1. Basant pur 2. Jayman galpur 3. Hinjalk hol 4. Jaganat hpur is called as Jillinda .	
				2.Jayamangal pur (A)										
				3.-do- (B)	266	290	556	394	12	125	12			
				4.Hinjakhhol	222	249	471	340	46	50	10			
				5. Jagannathpur	72	60	132	273	26	125	-			

**SECTION/ BEAT WISE HUMAN & CATTLE POPULATION OF VILLAGES SITUATED INSIDE THE SASNCTUARY (MAHANADI WILDLIFE DIVISION)**

Range	Section	Beat	Village	Population			Population of Cattle						
				Male	Female	Total	Cow	Buffalow	Goat	Sheep	Polutry	O th er s	Total
Chhamundia	Chhamundia	Chhamundia	Raimoda	20	16	36	21	16	7		24		68
			Janisahi	23	17	40	20	14	8		23		65
			Khandadhua	26	23	49	22	15	9		25		71
			Khalisahi	54	51	105	45	32	22		56		155
			Kumbhira	298	242	540	130	129	29	66	185		539
			Khani										
			Dhubabari	88	92	180	30	35	28	35	52		180
			Rajingi	270	226	496	95	104	20	83	205		507
			Mohanapada	66	57	123	46	50	119	68	95		378
			Raigadia	106	99	205	38	30	115		186		369
			Dasipur	90	72	162	14	-	29		67		110
			Maskajhula	46	42	88	18	20	31		22		91
			Ishwarpur	243	227	470	85	102	66	64	102		419
			Bentapada	143	131	274	56	47	104	105	110		422
			Chhamundia	545	493	1038	204	282	247		306		1039
			Haripur	186	189	375	112	91	67		180		450
			Kanipokhhari	50	46	96	40	48	104	20	66		278
			Kandhajillinda	37	33	70	20	23	49		72		164
			Muduligadia	44	40	84	40	54	69		43		206

			Bethia Sahi	135	110	245	35	62	96		78		271
		Purunapani	Salpa Ganda	20	16	36	12	20	16		18		66
			Musuguda	11	14	25	14	23	19		23		79
			Purunapani	45	42	87	20	28	16		35		99
	Badamul	Badamul	Badamul	99	102	201	29	50	37		115		231
			Malisahi	85	88	173	42	78	67		122		309
		Kuturi	Kuturi	52	43	95	36	52	43		67		198
		Dhipisahi	Dhipisahi	93	90	183	10	26	16		118		170
			Gerdi Sahi	31	36	67	12	23	27		46		108

### HUMAN AND CATTLE POPULATION OF VILLAGE SITUATED INSIDE THE SANCTUARY

Sl No	Range	Section	Beat	Name of village	Population		Cattle Population					Remarks
					Male	Female	Cow	Buffalow	Goat	Sheep	Total	
	Kusang	Kusang	Marada	Marada	14	13	10	28	24		62	Pigs are not kept in any village.
			Kusang	Sitalpani	3	4	6	-	5		11	
			-do-	Atalsara	68	70	115	135	133		383	
				Kumari	348	373	170	413	355		938	
				Bhapur	91	138	206	6	41		253	
				Hatigarh	90	123	135	22	44		201	
				Ghangurupada	15	22	143	134	90		367	
				Budhamba	45	62	112	80	184		376	
				Nuapada	70	85	120	34	42		196	
				Semiguda	3	2	6	6	-		12	
			Sripaju	Padmatola	12	12	134	18	114		266	
				Gedrisahi	137	115	368	102	281		751	
				Sripaju	60	40	53	60	105		218	
				Hinjal	99	98	147	83	198		428	
				Kutibari	124	111	209	98	158		465	
				Satkhandra	270	300	333	125	227		685	
				Nandagadu	36	47	61	6	60		127	
				Jauganda	16	19	6	14	20		40	
				Dhadiamba	18	21	72	-	33		105	

## ABSTRACT OF HUMAN AND LIVESTOCK POPULATION OF SANCTUARY

<b>Name of Range</b>	<b>Population</b>	<b>Cow</b>	<b>Bufallow</b>	<b>Goat</b>	<b>Sheep</b>	<b>Total</b>
Purunakote	8,687	5,075	1,749	4,595	-	11,419
Pampasar	1,426	749	-	555	-	1,304
Jillinda	12,756	6,784	1,436	3,383	424	12,027
<b>Satkosia WL Division</b>	<b>22,869</b>	<b>12,608</b>	<b>3,185</b>	<b>8,533</b>	<b>424</b>	<b>24,750</b>
Chhamundia	5,543	1,246	1,454	1,460	441	4,601
Kusanga	3,174	2,406	1,364	2,114	-	5,884
<b>Mahanadi WL Division</b>	<b>8,717</b>	<b>3,652</b>	<b>2,818</b>	<b>3,574</b>	<b>441</b>	<b>10,485</b>
<b>GRAND TOTAL</b>	<b>31,586</b>	<b>16,260</b>	<b>6,003</b>	<b>12,107</b>	<b>865</b>	<b>35,235</b>

APPENDIX-20

### LIST OF ROADS INSIDE SATKOSIA GORGE SANCTUARY

#### A) STKOSIA WILDLIFE DIVISION

Sl. No.	Name of the road	Length of Road (in Kms.)			
		Forest	P.W.D.	Panchayat	Hilly
1.	Pampasar-Raigoda-Lembuchali ( Angul/Athagarh border)	26.71	--	--	7
2.	Raigoda-Sanctuary border (on Nuakheta road)	1.24	--	--	7
3.	Rasanda-Bhurkundi	11.5	--	--	7
4.	Bhurkundi-Tulka	6.4	--	--	6
5.	Tulka-Chhotkei-Purunakote	15.5	--	--	2
6.	Tulka-Labangi (via-Chuanri)	14.13	--	--	10
7.	Chhotkei-Katrang	17.0	--	--	3
8.	Katrang-Hatibari	5.0	--	--	3
9.	Katrang-Jurum(Athagarh border)	4.0	--	--	-
10.	Purunakote-Baghmunda	9.0	--	--	-
11.	Baghmunda-Tarava( via-Kumuri)	10.0	--	--	3

12.	Baghmunda-Majhipada	15.0	--	--	6
13.	Karadapada-Bipradihi	14.0	--	--	-
14.	Tikarpada- Katrang(river view)	15.0	--	--	-
15.	Tikarpada- Tikarpada FRH	1.0	--	--	-
16.	Jagannatghpur-Tainsi	--	--	10	-
17.	Pampasar-Tikarpada	--	30	--	-
18.	Tikarpada-Jamudoli	14.0	--	10	-
19.	Baliput-Angul border(river view)	5.0	--	--	-
20.	Kumuri-Sahajbahal chhak	6.5	--	--	-
21.	Asanbahali link road	4.25	--	--	-
22.	Sriaribhundi to Chunabhathi	5.00	--	--	-
<b>TOTAL</b>		<b>186.23</b>	<b>30</b>	<b>20</b>	<b>54</b>

#### B) MAHANADI WILDLIFE DIVISION

Sl. No.	Name of the road	Length of Road (in Kms.)			
		Forest	P.W.D.	Panchayat	Hilly
1.	Sansilinga-Badmul	12.0	--	--	--
2.	Gergeri-Doising	13.0	--	--	--
3.	Gergeri-Sulia Parbat (Boudh border)	18.0	--	--	--
4.	Bhabapur-Padmatola	15.0			--
5.	Satakhanda-Kutibari	5.0			--
6.	Kusang-Tikarpada	--	10	--	--
7.	Burudiha-Nayagarh border	--	--	3.5	--
8.	Nandagaru-Bankajhari	--	--	10.0	--
<b>TOTAL</b>		<b>63</b>	<b>10</b>	<b>13.5</b>	<b>--</b>
<b>GRAND TOTAL</b>		<b>237.25</b>	<b>40</b>	<b>33.5</b>	<b>54.0</b>

#### APPENDIX-21

#### LIST OF BUILDINGS WITH LOCATIONS. IN SATKOSIA WILDLIFE DIVISION

Place	Name of Building	Year of Construction	Plinth Area (in Sft)	Condition
Angul	Division Office building	Transferred from Silviculturists, Orissa	2090	Good
	Store room	-do-	665	Good
	Garage	-do-	198	Good

	Cycle Stand	-do-	216	Good
	Clerks Qtr.inside Office premises	-do-	680	Good
	D.F.O.s Residence	Transferred from Angul Division	2340	Good
	A .C.F.s Residence	1991	1851	Good
	F.G. Qtr. near DFOs Res.	1991	517	Good
	Choukidar Qtr.	1986	352	Good
	Mobile Barrack`	1994	1144	Good
	Anti-poaching shed	2005-06	400	Good
Pampasar Range	Range office cum res.		1200	Good
	Foresters Qtr at Pampasar		700	Good
	FRH at Pampasar		600	Manageable
	FRH at Pampasar		500	Manageable
	Ticket house at check gate		150	Good
	Barrack at Pampasar		450(M)	Good
	WFP god own		225	Good
	VHF shed		300	Good
	Marking shed at Pampasar	1983-84	-	Good
	FRH at Labangi		1913	Good
	F.G. shed at Labangi		416	Good
	Forester Qtr at Jagannathpur		400	Good
	R.I.shed at Jagannathpur		200	Good
	F.G.Qrs at Tarava		222	Damaged
	School cum Medial centre at Tarava		800	Good
	-do at Asanbahal		800	Good
	F.G. shed at Kumuri		350	Damaged
	Anti-poaching shed at Kumuri		400	Good
F.G. qrs at Hinjadoli		300	Damaged	
Raigoda Range	FRH at Raigoda		900	Manageable
	F.G.Qrs at Raigoda		400	Manageable
	Range office cum Res.			Good
	Mobile Barrack at Raigoda			Manageable
	Garage at Raigoda		150	Manageable
	F.G shed at Bhurkundi		300	Manageable
	R.I.Shed at Raigoda		120	Manageable
	Gate shed at Bhurkundi		300	Good
Purunakote Range	Range Office cum Res.		1200	Good
	F.R.H.at Purunakote		1400	Damaged
	Foresters Qrs.At Purunakote		600	Damaged
	F.G .Qrs at Purunakote		350	Damaged
	Barrack at Purunakote(DWT)		1500	Damaged
	F.G. Qrs at Chhotkei		300	Good
	FRH at Tulka		1400	Manageable

	F.G.Qrs at Tulka		300	Good
	Store house at Tulka		300	Manageable
	Foresters Qrs at Tulka		400	Good
	Kitchen to FRH Tulka		300	Damaged
	FRH at Baghamunda		1600	Manageable
	Kitchen to FRH Baghamunda		150	Damaged
	Foresters Qrs at Baghamunda		450	Manageable
	F.G.Qrs at Baghamunda		300	Manageable
	Barrack at Baghamunda		350	Damaged
Tikarpada Range	FRH at Tikarpada (New)		1500	Good
	-do- (Old)		1717	Manageable
	Research Officers Res.(FRH) at Tikarpada		1200	Good
	Kitchen to FRH Tikarpada		1000	Manageable
	Interpretation Hall		800	Good
	Store Room		600	Good
	Garage		150	Manageable
	Range Officers Rest house at Tikarpada	1930-31	243	Manageable
	Kitchen to Range Office	1930-31	226	Manageable
	F.G.Shed at Tikarpada		300	Manageable
	-do- -do-		300	Manageable
	-do- -do-		400	Manageable
	Foresters Qrs at Tikarpada		650	Manageable
	F.G.Shed at Majhipada		300	Manageable
	F.G.Shed at Majhipada		437	Manageable
	F.G.Shed at Naleswar		450	Good
	Range Office-Cum-Res		1200	Good
	Seed godown			Good
	Rescue centre			Good
	Laboratory			Good
Jillinda Range	Range Office- cum –Res		1050	Good
	Rest Shed at Jillinda		320	Good
	Office at Jillinda		525	Good
	Foresters Qrs at Jillinda		720	Manageable
	F.G.Shed at Jillinda		437	Manageable
	F.G.Shed at Kamaladihi		525	Manageable
	F.G.Shed at Siaribhundi		456	Manageable
	F.G.Sed at Sisoopathar		270	Manageable
	G.G. Shed at Baliput		540	Manageable
	-do-		540	Manageable
	C.G.Shed at Baliput		266	Damaged
	A.P.Shed at Sisoopathar		266	Manageable
	Foresters Qrs at Katranga		680	Good
	F.G.Qrs at Katranga		320	Good



**LIST OF EXISTING BUILDING IN MAHANADI WILDLIFE DIVISION. NAYAGARH**

<b>Place</b>	<b>Name of the building</b>	<b>Year of construction</b>	<b>Plinth area (in Sft)</b>	<b>Condition</b>
Kusang Range	Beat house at Kusanga	Transferred from Boudh Divn.	20.35	Manageable
	Beat house at Marada	-do-	36.89	Needs Repair
	Beat house at Sitalpani	-do-	50.11	Good
	Beat house at Kumuri	-do-	25.00	Needs Repair
	Beat house at Padmatola	-do-	58.80	Good
	Foresters Qrs At Kusanga	-do-	37.17	Needs Repair
	Foresters Qrs At Sitalpani	-do-	73.42	Good
	Range Office –cum-Res at Kusang	1991	114.82	Needs Repair
	Food Distribution centre at Kusanga		59.20	Good
	Protection shed at Kalarabank		21.553	Needs Repair
	Protection shed at Sunakhania		22.437	Needs Repair
	Antipoaching check gate at Sitalpani		12.077	Good
	Antipoaching check gate at Marada		33.444	Good
Chhamundia Range	FRH at Chhamundia	Transferred from Nayagarh Division	175.62	Needs Repair
	Beat house at Chhamundia	-do-	41.52	Manageable
	Beat house at Badmul	-do-	59.53	Needs Repair
	Beat house at Kuturi	-do-	54.93	Manageable
	Foresters Qrs at Chhamundia	-do-	42.73	Manageable
	Gate house at Chhamundia	-do-	21.85	Needs Repair
	Protection shed at Salapaganda	-do-	28.43	Damaged
	Protection shed at Khandadhua	-do-	34.00	Damaged
	Antipoaching shed at	-do-	21.36	Needs

	Kuturi			Repair
	Kitchen house at Chhamundia	-do-	46.81	Needs Repair
	Antipoaching shed at Chhamundia	-do-	52.69	Good
	Protection Barrack at Chhamundia	-do-	36.73	Good
	Protection Barrack at Badmul	-do-	53.97	Needs Repair
	Protection shed at Chhamundia	-do-	51.374	Needs Repair
	F.G.Qrs at Kumbhirakhani	-do-	64.42	Good
	Antipoaching shed at Purunapani	-do-	32.515	Good

## APPENDIX-22

### COMPARTMENT HISTORY

(a)

Division – Angul Block – Tainsi R.F. Compartment No.1, Area in Hec 305.4

1:25,000 Map Reference – 73/D/14/NW

Division in to Sub-Compartments – Divided in to 3

Sub-Compartments	1a	-	235.550 ha
	1b	-	61.570 ha
	1c	-	8.280 ha

2. Boundaries ...

North West	The reserve boundary line from the Tarva-Baghamunda road near pillar No.52 to Pillar No.72.
-	
East	A line running from pillar No.72 up to the top of Palo pahar (681.84 mts).
South East	From the peak of Palo pahar down ravine in S.W. direction to where the Tarva –Baghamunda road meets the cart track from Asanbahal.
South	The Tarva –Baghamunda Road.

3. Configuration of the ground -

Hilly for the most part except for some distance north of the road where the slope is gentle. The North-East corner of the Comptt. Is occupied by the West and South-West slopes of Palo pahar which are very steep except in the valley along the Nuapara foot path, where Ulabari pahar rises steeply and occupies the centre of the compt. This hilly slopes more gradually in its South aspects to the road. But in many places as at Buchunda Bogra, the ground is almost level. All aspects are represented. Elevation – 274.32 mts to 681.84 mts.

4. Geology, Rock and Soil -

The chief rocks are gneiss is and granites with some quartzite. The soil is for the most part a sandy loam, stony on the higher slopes but general and fertile in the valleys and lower elevations.

Result of Soil Test:

PH	T.S.S. M.Mhos / cm	O.Carbon %	Avl. Nitrogen Lbs/Ac	AVI/ Phosphate Lbs /Ac	Avl. Pattassium/ Lbs/ Ac	Texture
6.9	0.8	0.54	290.15	16.0	254.4	CL
6.9	0.8	0.50	220.05	18.0	264.2	CL
6.9	0.8	0.48	200.00	20.0	275.6	CL

Past History:

Selection felling in 1914-16. The eastern 2/3rds (including Ulaberi hill) worked. Under selection felling in 1928-29 the remaining 1/3rds in North-East near Nuapara worked in 1929-30. Very heavily worked for bamboos in 1930-31.

Under Mr. Mooney's plan placed under the Tainsi felling series of the Selection Working Circle and was not worked under this system during the currency of the plan. Bamboos were extracted in moderate quantity in 1938-39 and 1940-41 from this compartments.

Under Mr. Jee's plan 1a is placed under the Tarva felling series of the selection working circle and 1b is placed under the Teak plantation working Circle. This compartment was worked during 1950-51 as Coupe 6, Lot-1 and total 505 trees were

marked out of which 209 were Sal and total revenue realized was Rs.14,000/- and in lot-2, 427 trees were marked out of which 155 were Sal total Rs.13,600/- was realized as revenue. Good quality of Salia bamboos have been removed during 1946-47 and 1954-55 from this compartments. Bamboos were worked in 4 years working circle.

Under Mr. Mohapatra's plan la placed under the Tarva felling series of the selection working circle and was to be worked as coupe-1 during 1970-71. No record available regarding the out turn, lb was kept under Teak plantation working circle.

#### Record of plantation

Year	Species	Area as per survey in hec	Remarks
1957-58	Teak	22.0	
1958-59	Teak	5.57	
1985-86	Teak	17.0	
		44.57	

And 1c kept under Misc. working circle. Bamboos were marked in 4 years cutting cycle.

In this new plan under revision la has been placed under Tarva felling series of the Selection Working circle and lb is placed under Teak plantation working circle and lc (Misc.area).

### COMPARTMENT HISTORY

(B)

Block – Tainsi R.F.

Compartment No. 1

Year – 1988

Areas of quality classes in acres	Total	Allotment to Working circles
Not estimated		Over lapping Bamboo W.C.

1a-	252.74 hac	Selection Working circle
1b-	44.57 hac	T.P.
	17.00 hac	P.T.P.
	61.57 hac	Teak plantation W.C.
1c-	8.09 hac	P.P
	0.19 hac	S.P.
	8.28 hac	Misc. area.

Description of the Growing stock - Forest Type 3c/c 2e(ii)

Moist peninsular Low Level Sal. The compartment comprise good dry misc. forest and constitute nearly 10% Q-III Sal and 65% Misc. crop and rest 25% Bamboo (Salia). But on higher slopes percentage of bamboo considerably increases.

The over wood comprises species like mostly Sal, Asan, Dhaura, Kurum, Rai, Sidha, Moi, and scattered Piasal, Siris, Mitikuia, Kendu, Halda, Mahul, Bahada etc.

The under wood comprises species like mostly Sal, Asan, Dhaura, Kurum, Rai, Sidha, Moi and scattered piasal, Siris, Gambhar, Kurum, Char, Giringa , Genduli etc.

The under growth comprises species like Pabikir, Ghuntuli, Karada, Patuli, Halada, Char, Bahada, Murha, Bheru, Sunari, Giringa, Kendu, Mohul, Kanteikoli.

Climbers are Atandi, Sali, Butea, Dantary, Muturi, Butea, Satabari.

Weeds are Eupatirium clerodendron etc.

There is a Teak plantation named (Bouchunda Bogra) in the South-East corner dating from 1887, quite a few nos. still existing but of very bad shape and are deteriorating being diseased but have attained 2 m girth which need to be exploited and replanting.

A patch of good sal and Asan, trees exist near the Baghamunda Tarva road in the Soputh-west point of the compartment and also at the foot of South west point of Ulaberi pahar. Sal, Asan, Dhaura, Kurum, Rai and Mai of 2m. girth are often seen in this compartment along with Asan, Dhaura, Piasal, Kurum, Mitikunia, Sidha in 1.5m. girth, Gambhar, sisoo are present in very few nos. but Bandhan is of very rare occurrence.

Regeneration of sal is good. Misc. species also regenerate well.

Density of the crop varfies from 0.4 to 0.5.

Wildlife available are Tiger, Bear, Sambar, deer, Kutra, Hare, Peacock and other birds etc.

A preservation plot exist in this compartment near Nuapada of 8.09 hac. Also there is a Sal sample plot of 0.19 hac. Maintained by Silviculture Division, Orissa, Angul.

Availability of exploitable girth trees is 12 per cha in this compartment.

Sd/-  
B.K.Padhi  
Range Officer

Sd/-  
Working Plans Officer-I  
Angul circle

**APPENDIX-23**

**MEMO OF UNDRSTANDING (MOU)  
FOR  
Eco –Development Committee.**

We, The Executive committee members of .....EDC do hereby under take an agreement collectively to protect and conserve the flora and founa of the Satkosia Gorge Sanctuary including their conserve young's eggs nests and habitats and water sources. We promise to rehabilitate degraded forests and protect the forest from fire, grazing, encroachment ,illicit felling ,unsustainable collection of NTFP hunting ,trapping ,and killing of wild animals. We will co operation management of the Sanctuary on successful protection of the Sanctuary the EDC members will enjoy the minimum confide usufructuary rights over fire wood, bamboo , and NTFP with accordance to necessary permission from the appropriate authority but that will not include commercial extraction or processing of the forest produce or trading .The authority of the Sanctuary will take-up ECO Development activities in the village to promote social and economic values of the members of EDC .

We both parties do agree to follow the above terms and conditions and sign this memorandum of undertaking which will come in to force from the date of signing by both the parties.

First party:-

Sl.No	Name of the EDC Members	Address	Signature
1.			
2.			
3.			
4.			
5.			

2<sup>nd</sup> Party:- Sanctuary authorities /Officials/Staff.

1.D.F.O.

2.A.C.F.

3.R.O.

4.Forester/VFW/FEO

5.Forest Guards

Witness:- (Other than the EDC Members /Sanctuary authorities )

1.VLW

2.VAW

3.L.I.

4.School Teacher

5.Hurticulture staff

6.Other EDC Members/other EC Members.

APPENDIX-24

“SATKOSIA ECOTOURISM SOCIETY”

MEMORANDUM

1. Name of the Society : Satkosia Eco-tourism Society (SESO)/(SETS)
2. a) Location of the Registered Office of the Society At/P.O. Hakimpada,Angul-759143  
Dist. Angul  
b) Area of operation All over Satkosia Gorge Sanctuary  
jurisdiction
3. Aims and objectives of the Society:

4. a) Complementing, supplementing, strengthening or otherwise expanding the activities of Forest Department, Govt. of Orissa in the promotion of eco-tourism in Angul, Cuttack, Boudh, Nayagarh districts in general and Satkosia Gorge Sanctuary in particular.
- b) To chalk out and support concrete plans and programmes for providing facilities and services of high standard for eco-tourists visiting Satkosia Gorge Sanctuary.
- c) To collaborate with experts and strategic partner(s) in furtherance of the objectives of the Society.
- d) To co-ordinate and liaise with national/international bodies, and funding agencies, and receive contribution for eco-tourism projects centered in Angul, Cuttack, Boudh and Nayagarh districts.
- e) To borrow from financing institutions to meet short term gaps in business expenditure for fulfilling the objectives of the Society.

**SATKOSIA ECO-TOURISM SOCIETY,  
ANGUL  
BYE LAWS.**

1. Name of the Society: Satkosia Eco-tourism Society (SETS)  
 a) Location of the Registered office Of the Society At:-Hakimpada, Angul-759143 PO.
2. Area of Operation/ jurisdiction All over Angul, Cuttack, Boudh and Nayagarh districts.
3. Short title, extent and commencement
  - a) These Bye-laws shall be called the Bye- Laws of the Satkosia Eco-tourism Society (SESO)/(SETS)
  - b) They shall apply to all the members, properties, activities and transactions of the Satkosia Eco-tourism Society.
  - c) They shall come into force on the date of registration of the Society i.e.” Satkosia Eco-tourism Society “ under the Societies Registration Act,1860.
4. Definitions In these Bye –laws unless there is any thing repugnant to the subject or context.
  - a) “Act” means the Societies Registration Act,1860
  - b) “Bye-Laws” means the Bye-Laws of Satkosia Eco-tourism Society, Hakimpada, Angul, Dist. Angul
  - c) “Chairperson” means the Conservator of Forests, Angul Circle, Angul
  - d) “Seal” means the common seal of the Satkosia



- Eco-tourism Society &  
e) “Secretary” means the Secretary of the Satkosia  
Eco-tourism

5. Registered Office

The Registered office of the Society shall be situated at the office of the Divisional Forest Officer, Satkosia Wildlife Division, Hakimpada, Angul until otherwise decided by the General Body.

6. Authorities of the society

- a) The General body shall be the supreme authority in Society all matters of control and administration of the society. It may delegate its authority and some of its powers and functions to the Governing Body / Sub-Committees as may be constituted by it or by the Chairperson from time to time.
- b) There shall be a Governing body consisting of the  
Following, namely
- i) Chairperson
  - ii) Secretary
  - iii) Two official members to be nominated by the  
Chief Wildlife Warden.
  - iv) Two non-official members to be selected by the General  
Body from among its non-official members. The maximum  
tenure of any non-official member will be two years at a  
time, subject to a maximum of two tenures.
- c) There shall be a Secretary of the Society who shall be the  
Chief Executive of the Society and shall have the power  
to do all such legal acts and deeds as may be delegated to  
him by the Governing Body.

7. Restrictions on the  
activity of the Society  
or its Authority

The Society or any of its authority shall not be competent to engage or appoint any person or lease or rent out, or in any way transfer possession of any land /premises/ capital asset of any office, rest houses, forest or area, or undertake or authorize any civil construction without the prior sanction of competent authority of Government.

8. Members and their tenure

- a) The following persons are the founding members, and these members together constitute the General Body.  
(Enclosed in a separate sheet.)

- b) The General Body is to induct six eminent persons in the field of Wildlife conservation and ecotourism as members of the Society other than those specified in clause above. Each such inducted member shall have a term of two years at a time. These inducted members will have voting rights also at par with the founding members.

9. Register of members

- a) A Register of members shall be maintained at the registered office of the Society in which the name, address and description of each member shall be entered together with the date of admission to the membership and date and particulars of cessation of membership wherever applicable.
- b) The addresses appearing in the Register of members shall be deemed to be the addresses of the members for the purpose of notice etc.

10. Office bearers.

- There shall be a Chairperson and a Secretary of the Society
- a) The Conservator of Forests Angul Circle shall be the ex-officio Chairperson of the Society. He shall preside over and conduct the meetings of the General Body.
- b) The D.F.O., Satkosia Wildlife Division, Angul shall be the ex-officio Secretary of the Society. The Secretary shall perform the day to day routine functions of the society for implementing the work programme approved by the Governing Body & shall perform the duties as may be required for fulfilling the objectives of the societies, subjected to guidance and control of the chairperson.

**Name & address of founding members**

1. Conservator of Forests, Angul Circle, Angul
2. Sri Susanta Nanda, I.F.S.  
D.F.O., Satkosia Wildlife Division, Angul
3. Sri S.S. Mishra, O.F.S.-I  
D.F.O., Angul Division, Angul
4. Sri Sudarsan Behera, I.F.S.-I  
D.F.O., Nayagarh Division, Nayagarh
5. Sri Sudipta Das, O.F.S.-I  
D.F.O., Mahanadi Wildlife Division, Nayagarh
6. Sri Harsha Bardhan Udgate, O.F.S.-II,  
A.C.F., Satkosia Wildlife Division, Angul - Shall be the members of the Society as long as they hold such office.
7. Shri S.K.Patnaik, I.F.S.(Rtd.),  
Chief Wildlife Warden, Orissa -9437036606(M) -do-
8. One representative from Bharat Gyana Vigyan Samiti (N.G.O.) -do-

9. One representative from FES, Angul
10. One representative from NEWS, Angul
11. Shri G. Mohapatra, D.F.O.(Rtd.),BBSR- 9437012826
12. Biswajit Mishra,Director,Jana Sikhya Sanstha,Angul-06764231797,231340
13. Prallahad Chandra Patnaik, National CounsII Member  
Youth Hostel & Secretary, Y.H.A.J., Nalco Unit- 06764-231373,232192, 232902
14. Prof. S.K. Dutta, North Orissa University, Takatpur, Baripada.
15. Sri Jayanta Mardaraj Harichandan, Ex-Honorary Wildlife Warden, Balasore-9937349336

11. Powers & functions of General Body

a) The General body shall have general control over the affairs of the Society & shall have authority to exercise all powers and to perform acts and deeds for the running of the Society consistent with the aims and objectives of the Society.

b) The General Body, except for what is provided under Bye-Law 7, shall have a full powers to alter, extend or abridge the aims, objectives and purposes of the Society, to change its name, to amend the Bye-Laws as they may thing essential for the regulation and proper functioning of the Society, subject to such guidelines and directives issued by the State Government from time to time. All amendments to be made shall be implemented only after the same are approved by the registrar of the Society under Section 12 of S.R.Act,1960. Provided that any such proposition shall be submitted to the members of the Society 30 days prior to the meeting convened by the general body for consideration of the same.Su7ch proposition shall have to be agreed to, by at least two thirds of the members present and voting and further confirmed by two thirds of members present and voting at a second special meeting to be convened by the Secretary at least one month after the former meeting.

c) A report shall be submitted by the Secretary to the Registrar of Societies every year within fourteen days of the first General Body meeting of year, or if for any reason such a meeting could not be held, then before the fourteenth of July starting the names, addresses and occupations of the members of the General Body.

d) The General Body may accept the management and administration of any endowment or trust fund or any subscription or donation, if the same is unaccompanied by any condition and not inconsistent with or in conflict with the nature and objectives with which the Society has been established .Provided that the General Body shall not accept any condition regarding use of any forest land, office premises, and equipment and regarding building construction which is inconsistent with the forest (Conservation ) Act,1980 & Wildlife(Protection) Act,1972.

12. Meeting of the

a) The General Body shall meet at least once a year.  
General Body .The meeting of the General Body shall be convened by the Secretary.

b) The first meeting of the General Body for a financial year

shall be held at date not later than 30<sup>th</sup> June, where among other business of the Society the following shall be disposed of namely :-

- i) Consideration and approval of the annual report of the activities of the Society for the preceding year together with the audited copy of the balance sheet for the said year.
  - ii) Income and expenditure, receipt and payment on accounts, and the Audit report relating to the previous year, and
  - iii) Appointment of Auditors for the current year
- c) The Secretary shall convene the General Body Meeting whether the Chairperson thinks it necessary, or whether written and signed requisition for such a meeting is made by at least six members of the General Body.
- d) Written notice for every meeting accompanied by the agenda, and stating the date, time and venue of the meeting shall be dispatched to all members either through special messenger or through Registered post at least fifteen days before the date fixed for the meeting.
- e)
  - i) The quorum for any meeting of the General Body shall be half the members.
  - ii) If within one hour from the time appointed for holding a meeting, the quorum is not present, the meeting shall stand adjourned to a time as decided by the Chairperson

## **“SATKOSIA ECO-TOURISM SOCIETY, ANGUL”**

### **RULES**

#### **1. Introduction.**

- (a) “Society” means “The Satkosia ECO-Tourism Society, Angul.”
- (b) “General Body” means the General Body of the Society.
- (c) “Governing Body” means the Governing Body of the Society.
- (d) “Chairperson” means the Conservator of Forests, Angul Circle.
- (e) “Secretary” means the Secretary of the Society.
- (f) “Government” means the Government of Orissa &
- (g) “Union Government” means the Government of India.

- (h) “Chief Wildlife Warden” means head of the Wildlife Wing of the Forest Department, Government of Orissa.

## **2. Office bearers of the Society.**

- (a) The Conservator of Forests, Angul Circle  
Shall be the Ex-officio Chairperson.
- (b) The Divisional Forest Officer, Satkosia Wildlife Division shall be the ex-officio Secretary.

## **3. Duties & powers of the Chairperson.**

- (a) He shall preside over the meetings of the General Body & the Governing Body.
- (b) He shall perform such functions & exercise such powers as may be provided under the Bye-laws of the society & rules made there under, or as may be specifically delegated/ entrusted to him by the General Body.

## **4. Duties & powers of the Secretary.**

- (a) He shall be the Chief Executive of the Society.
- (b) He shall be responsible for implementation of the decision of the General Body & Governing Body.
- (c) He shall exercise all the powers as provided by the Bye-laws or as delegated by the General Body/ Governing Body.

## **5. Rights, powers & duties of the Governing Body.**

- (a) The business & affairs of the Society shall be carried on & managed by the Governing Body subject to the guidance & scrutiny of the General Body.
- (b) The Governing Body shall exercise all such powers & perform such functions as are necessary or proper for the achievement or in furtherance of the objectives of the Society.

## **APPENDIX-25**

# **ORISSA RESETTLEMENT AND REHABILITATION POLICY, 2006**

## ***Preamble***

Government of Orissa has been pursuing various development initiatives to improve the quality of lives .Ensuring social justice being one of the major cornerstones of development, the Government always proactively tries to make sure people’s participation in development process. In spite of Government’s intension to bring development to the people, development interventions do at times create undesirable consequences. Displacement due to large development

projects is one such phenomenon. Government of Orissa has been responding to this problem through various projects specific Resettlement and Rehabilitation policies and plans. The current intervention of policy formulation has actually taken note of the lessons learnt of learning and retrospection. The present policy draws its strength from experiences from the implementation of past policies, best practices in other states and Orissa Government's Industrial Policy Resolution, 2001. Consultation with various direct and indirect stakeholders including civil society of the state has been conducted and the views of the academicians and specialists in the field of resettlement and rehabilitation have been considered as a part of democratic response of the government in policy formulation. Limitations of the past policies have been acknowledged and analyzed and flexible framework has been attempted, which nonetheless demonstrates the dynamism of the government. Unlike many other policies, there is a strong focus on the modalities of implementation of this policy that makes it a vibrant instrument to promote sustainable development in the state.

1. Short title application and commencement.

- i) This policy may be called as "The Orissa Resettlement and Rehabilitation policy, 2006" and shall come into effect from the date of its publication in the Orissa Gazette.
- ii) It shall apply to all those projects, for which acquisition of private land under Land Acquisition Act, 1894 or under any other law(s) for the time being in force or proclamation inviting objections in case of government land is notified.
- iii) This shall also be applicable to all projects for which land is acquired through negotiation under the previous of this policy.

2. Definitions; In this policy, unless the context requires otherwise:

- a) "**Agricultural land**" means land used or capable of being used for raising of crops, grass or garden produce, horticulture, dairy farming, fish farming, breeding and keeping of livestock or used as pasture or for any other purpose where such use is ancillary to agriculture.

b) “**Compensation**” has the same meaning as assigned to it under the Land Acquisition Act, 1894.

c) “**Cut off date**” for the purpose of compensation shall be the date of which the notification declaring the intention to acquire land under the relevant Act or under the provisions of the policy is published.

**Note:** For the purpose of declaring eligibility for R&P benefits, the list of displaced families, will be updated on the 1<sup>st</sup> of January of the year in which physical displacement is scheduled to take place provided that those families who move into the project area after determination of the “cut-off-date” will not be eligible for any benefit.

d) “**Displaced family**” means a family ordinarily residing in the project area prior to the date of publication of notification under the provisions of the relevant Act and on account of acquisition homestead land is displaced from such area or required to be displaced.

e) “**District Compensation Advisory Committee (DCAC)**” means the committee constituted by Government under relevant provisions of this policy.

f) “**Family**” means the person and his or her spouse, minor sons, unmarried daughter, minor brothers or unmarried sisters, father, mother and other members residing with him or her and dependent on him or her for his /her livelihoods.

**Note:** Each of the following categories will be treated as a separate family for the purpose of extending rehabilitation benefits under this policy.

- i) A major son irrespective of his marital status .
- ii) Unmarried daughter /sister more than 30 years of age.
- iii) Physically and mentally by the authorized person irrespective of age and sex (duly certified by the authorized Medical Board ). For this purpose. the blind / the deaf/ the orthopaedically handicapped/mentally challenged person suffering from more than 40% permanent disability will only be considered as separate family.
- iv) Minor orphan, who will has lost both his /her parents.
- v) A widow or a woman divorcee.
- g) “**Government**” means the Government of Orissa in Revenue Department.

h) "Land Acquisition Officer(LAO)" Means an Officer appointed by the Government by an order to perform duties as such under land Acquisition Act,1894 for the project and shall also include a separate Land Acquisition Officer.

i) "Non –Government Organization(NGO)" Means any organization duly registered under the societies Registration Act, 1860 and functioning for public cause outside the Government.

j) "Periphery" means the district(s) in which the project is geographically situated.

k) "Project" means the construction, extension or improvement of any work such as reservoir, dam, canal, highway, industrial Plant, factory, Mining, National Park, sanctuary etc. as notified by the Government from time to time and includes its officers and establishment within the state.

l) "Project area" for the purpose of extending R&P benefits means land , which is acquired /alienated/purchased for establishment of any project.

m) "Project Director Resettlement & Rehabilitation(PDR&R)" an Officer appointed by the Government by an order to perform such duties under R&R policy of the state for the project.

n) "Rehabilitation& Periphery Development Advisory Committee (RPDAC)" means the committee constituted by the Government under relevant provisions of this policy to look after rehabilitation and periphery development matters.

o) "State Level Compensation Advisory Committee " means a committee constituted by Government under relevant provisions of this policy.

p) "State Level Council On Resettlement & Rehabilitation (SLCRR) means the council headed by the Chief Minister constituted by a notification of Government to that effect.

3. **Policy objectives:** Objectives of the policy of the Government in general shall be:-

a) to avoid displacement where possible and minimize it, exercising available options otherwise.

b) to facilitate resettlement/ rehabilitation process:



- i) recognizing voices of the displaced communities (emphasizing the needs of the indigenous communities vulnerable sections) and
  - ii) ensuring environmental sustainability through participatory and transparent process and
  - iii) to help guiding the process of developing institutional mechanism for implementation, monitoring, conflict resolution and grievance redressal.
4. Survey and identification of displaced families
- a) Ordinarily within two months of publication of notice for acquisition of land for the development project, a socioeconomic survey would be undertaken in the manner to be decided by the Government for identification of displaced families and for preparing their socioeconomic baseline.
  - b) the list of displaced families shall be placed before and approved by the respective RPDAC.
  - c) the list of displaced families so approved will be displayed at the Collectorate /Block/Tahsildar/ Panchayat and other conspicuous locations wider dissemination.
  - d) RDC shall realistically assess the requirement of land for acquisition before issue of notification under the relevant law(s) or under the provisions of this policy.
  - e) A socio – cultural, resource mapping and infrastructural survey shall be conducted by an independent agency to be identified by the Government to ensure proper benchmarking. It will be the responsibility of the concerned project authority to conduct the survey within two months of notifying the intention to acquire land under the provisions of the relevant law(s) or under the provisions of the policy.
  - f) A comprehensive communication plan for awareness creation shall be formulated and executed in the affected area. The detailed modalities of this exercise that include involvement of civil society will be notified by the Government. The cost of implementation of this communication plan shall be borne by the project(s).

- g) Gram Sabha or Panchayats at the appropriate level shall be consulted in scheduled areas before initiating Land Acquisition proposal.
- h) Normal development programmes implanted by different agencies should be dovetailed with resettlement and rehabilitation package in resettlement habitats and made available to the displaced community on a priority basis.
- i) An identity card shall be issued to each displaced family in a manner prescribed by Government.

## **5. Project Types**

For the purpose of R&R benefits under this policy. Development projects are classified in to the following types.

- a) Industrial Projects.
  - b) mining projects.
  - c) Irrigation Projects, National parks and Sanctuaries.
  - d) Urban Projects and Linear Projects like roads and railways, Power lines, and
  - e) Any other Project.
6. land Acquisition and payment of Compensation /Award Procedure prescribed by Government shall be followed in acquiring land and other property and for payment of compensation /award .All compensation money due to the “displaced families” shall be paid through account payee cheques.

As regards “Public property” like school building , clubhouse, Hospital, Panchayat Ghar, Electricl installation ,Place(s) of workship value of such property affected shall be deposited with the concerened District Collector ,Either Project or District Administration shall take up construction of the place as would be determined in consultation with representatives of displaced persons.

The project proponet may opt for direct purchase of land on the basis of negotiated price after issue of notification requiring acquisition of land l under relevant Act(s) .If acquisition of land through direct purchase fails , other provisions of the relevant Act may be invoked.

Land not utilized by the project within the prescribed time limit and for the required purpose shall be resumed.

## **7. Resettlement and Rehabilitation plan**

Based on the list approved by the Government and option of displaced families, Resettlement and Rehabilitation plan shall be prepared by the Collector for resettlement and rehabilitation after due consultation with displaced communities in the manner determined by the Government. Such plan should address the specific needs of the woman, vulnerable groups and indigenous communities. The same will be placed before the RPDAC for approval.

While Preparing the plan, the following aspects should be taken into consideration.

- 1) Site for the resettlement habitat shall be selected by the RPDAC in consultation with the displaced families
- 2) No physical displacement shall be made before the completion of resettlement work as approved by the RPDAC. The certificate of completion of resettlement work will be issued by the collector.
- 3) Gram Sabha shall be consulted
- 4) Where there is multiple displacement, additional compensation amounting to 50% of the normal compensation payable shall be paid to each displaced family over and above the normal compensation in form of ex-gratia.
- 5) Provisions relating to rehabilitation will be given effect from the date of actual vacation of the land.
- 6) Project Authority shall abide by the provisions laid down in this policy and the decisions taken by RPDAC from time to time provided they are within the ambit of the approved policy of the Government.
- 7) District Administration and project Authorities shall be jointly responsible for ensuring that the benefits of R&P reach the target beneficiaries in a time bound manner.
- 8) Record of rights of the land and house allotted to the displaced persons should be handed over to them by the District Administration while resettling them in the Resettlement habitat. The District Administration shall take steps

for immediate declaration of the new Resettlement habitat as Revenue village if it is not a part of an already existing Revenue village.

- 9) Steps will be taken by the project Authorities for acclimatization of the resettled people in new habitat including development of cordial social relationship between the host and resettled communities and to ensure as far as practicable overall improvement of standard of living of the displaced families.

**8. Rehabilitation Assistance.**

Rehabilitation Assistance will be specific to the type of project as mentioned at para 5 above, because of difference in nature of projects, their source(s) of funding and magnitude of displacement/impact.

X

X

### **III. Type C: Water Resources /National Parks and Sanctuary**

#### **Rehabilitation package for Displaced family(DF)**

- a) Homestead land @ 0.10 acre in Rehabilitation habitat or cash equivalent @Rs 50,000/- to each displaced family opting for self relocation elsewhere.
- b) House Building Assistance: Rs 1,50,000/- to each displaced family which includes cattle shed. This will be admissible to all displaced families whether settling in a Resettlement Habitat or elsewhere.
- c) Assistance for agricultural fund : Each Displaced Family belonging to ST category shall be provided two-and-a-half acres of irrigated agricultural land, or five acres of non-irrigated agricultural land.
- d) Registration cost: Of land up to 5 acres of un-irrigated land and half acres of irrigated land in case of indigenous households or 4 acres of un-irrigated land or 2 acres of irrigated land for other displaced households who opt for cash based rehabilitation in lieu of land value paid by the project authority within a period not exceeding five months the date of displacement.

**9. Benefit to landless and homestead-less encroachers common to all categories.**

- a) An encroacher family, who is landless as defined in the Orissa Prevention of Land Encroachment Act, 1972, and is in possession of the encroached land at

least for a period of ten years continuously prior to the date of notification under relevant law(s) declaring intention for land acquisition will get ex-gratia equal to compensation admissible under the Land Acquisition Act, 1984 for a similar category of land to the extent of land under his physical possession up to a maximum of one standard acre, if the encroachment is unobjectionable while determining the extent of land for such compensation the rayati land by himself is to be taken into account.

b) An encroacher family who is homestead-less as defined in the Orissa prevention of Land Encroachment Act, 1972 and is in possession of the year encroached land at least for a period of 10 years continuously prior to the date of notification under relevant law(s) declaring intention of land acquisition, will get ex-gratia, equal to compensation for the similar category of homestead land against the encroached homestead land up to a maximum of 1/10<sup>th</sup> of an acre in rural areas or 1/25<sup>th</sup> of an acre in urban areas, if the encroachment is unobjectionable while determining the extent of land for such compensation the homestead land held by himself is to be taken into account. The ex-gratia will be in addition to the actual cost of structures thereon if the encroachment is found to be objectionable (s) he will be entitled to the cost of structure only.

10. **Other assistance common to all categories**

a) Maintenance Allowance in order to ensure timely vacation an allowance of Rs2,000/- per month per displaced family shall be provided on vacation of land/house for a period of one year from the date of vacation as determined by the Collector concerned.

b) Assistance for temporary shed: An assistance of Rs10,000/- shall be provided to each displaced family.

c) Transportation Allowance: Transportation allowance of Rs2,000/- of free transportation to the resettlement habitat or their new place of inhabitation, shall be provided to each displaced family by the project Authority.

provided that state Government in Revenue Department shall review and may revise the rate if necessary once in every two years basing on the index point.

## **11. Additional provisions for assistance**

Notwithstanding anything contained elsewhere in this policy, the Government or the project Authority may extend any additional benefits and provisions to the displaced families keeping in view the specific nature of displacement.

## **12. Special benefits to displaced indigenous families and primitive tribals.**

a) while developing the resettlement plans the socio- cultural norms of indigenous and primitive tribal groups will be respected.

b) Each displaced family of indigenous category shall be given preferential allotment of land.

c) As far as practicable indigenous communities shall be resettled in a compact area close to the natural habitat.

d) Indigenous displaced families resettled outside the district shall be given 25 percent higher R& R benefits in monetary terms.

## **13. Indexation of Rehabilitation Grant**

Rehabilitation of Rehabilitation Grant

Rehabilitation grant will be indexed to the wholesale price index (WPI) with 01.04.2006 as the base the grant will be revised by the Government once in every two years thereafter on the basis of WPI.

## **14 Compensation Advisory Committee**

Government in Revenue Department may constitute District compensation Advisory committee (DCAC) under the chairmanship of the collector to determine necessary price. Adequate representation will be given to woman and indigenous communities (Where ever applicable) in the committee.

If any dispute arises on recommendation of the DCAC the matter will be referred to the State level compensation Advisory Committee (SCAC) chaired by the member, Board of Revenue whose decision shall be final and binding on all concerned. The composition of this State level compensation Advisory Committee will notified by the Government.

## **15. Rehabilitation and periphery Development Advisory Committee(RPDAC)**

In order to encourage participation of displaced people their elected representatives in implementation and monitoring of R&R package, to oversee and monitor periphery development, the Govt. may constitute a Rehabilitation -cum- periphery Development Advisory Committee (RPDAC) for each or a group of projects failing in one district. The detailed composition of the committee shall be notified by the Government. Adequate representation will be given to woman and indigenous communities (wherever applicable) in the committee. chairman of the committee will be at liberty to co-opt members for efficient discharge of its functions.

#### **16. State Level Council on Resettlement and Rehabilitation(SLCRR)**

At the State level there will be a council headed by the Chief Minister to advise, review and monitor implementation of Resettlement and Rehabilitation policy. The Council may comprise Ministers, select representatives of the people, leading social activists, academicians and experts of national and international repute and senior officials of the Government.

#### **17. LA and R&R structure**

##### **a) State level**

A direction of R&R will be constituted to discharge and oversee the implementation of the R&R policy. Detailed structure and function of this Directorate will be notified by the Government.

##### **b) District/Project level**

I) Depending on magnitude of the RR works at the project level, there may be a Project Director, Resettlement and Rehabilitation(PD-RR) who shall be assisted by such other officers as government may decide. The PD-RR shall be the Chief Coordinating Officer between all the line departments the matter of resettlement and rehabilitation. he will be responsible for implementation of the policy and timely execution of R&R works under the overall supervision and guidance of Collector and Director, R&R.

II) Where R&R work is of lesser magnitude, the same can be undertaken by the LAO of the Collectorate.

#### **18. Budgetary provision and allotment**

Where required adequate budget provision will be kept toward land acquisition and R&R establishments to ensure effective implementation of R&R policy. The Directorate of

R&R should submit such budgetary estimate/works by 1<sup>st</sup> January of every year. Government will ensure timely release of allotment to the concerned authorities.

**19. Grievance Redressal Mechanism**

An effective Grievance Redressal Mechanism will be set up at District and Directorate level to deal with grievance of the project displaced people relating to land acquisition ,resettlement and rehabilitation . Besides all the project authorities shall be asked to set up an effective Grievance Redressal Mechanism relating to their project. Effective participation of the displaced communities will be ensured in the process.

**20. Assessment of policy implementation** Government may from time undertake assessment of the implementation of this policy through appropriate agencies.

**APPENDIX-26**

**LIST OF PA VALUES BY SCALE AND IN THE ORDER OF PRIORITY**

No.	Value Category	Constituents
1	Global	Most <i>endangered</i> Gharials, endangered Tiger, sizeable Central Elephant and Chousingha population.
2	National	Southern most <i>natural home</i> of Gharials in fast flowing river Mahanadi contributing to a <i>distinct gene pool</i> . Gorge supporting four species of <i>endangered</i> Turtles- the conservation of which is of National priority. .
3	Regional	Biogeographically, meeting point of two <i>biotic provinces</i> contributing to assemblage of flora & faunal



		extravaganza . <i>Biodiversity</i> is one of the maximum.
4	State	Second largest population of Elephant, Gaur & Tiger. <i>Critical catchment's role of the sanctuary in preventing siltation down stream.</i>
5	Local	Mahanadi River is spawning sites for commercially important carps and prawns. A scenic spot for tourists and local people and a fishing paradise. Satkosia sanctuary has tremendous forest resource potential for sustenance of local population on it.

**APPENDIX-27**

AS IS IN APPENDIX 3 OF MANAGEMENT PLAN

**APPENDIX-28**

**NOTIFICATION OF NATIONAL PARK**

**NOT REQUIRED.**

**APPENDIX-29**

**CONSTITUTION AND EXTENT OF THE PA BY COMPARTMENTS INDICATING  
COMPARTMENTWISE AREA.  
AREA STATEMENT OF FOREST RESERVED & PROTECTED**

(P.R.F.s & D.P.F.s) only.

Sl. No.	Block	Compartment	Sub-compartment	Area in Hectare	1:25000 map reference
1	2	3	4	5	6
1	Raigoda RF	1	1a	181.587	
			1b	10.0	
		1		191.587	
		2	2a	267.869	
			2b	20.200	
			2c	0.17	
		2		288.239	
		3	3a	183.611	
			3b	20.558	
		3		204.169	
		4	4a	195.219	
			4b	17.528	
		4		212.747	
		5	5a	230.477	
			5b	24.019	
		5		254.496	
		6	6a	194.496	
			6b	60.000	
		6		254.496	
		7		202.453	
		8		223.614	
		9		275.657	
		10	10a	166.146	
			10b	48.889	
		10		215.035	
		11	11a	303.680	

			11b	10.294	
		11		313.974	
		12		153.270	
		13		180.145	
		14	14a	224.758	
			14b	78.350	
		14		303.108	
		15	15a	169.862	
			15b	14.862	
		15		184.724	
		16	16a	608.156	
			16b	117.235	
			16c	111.30	
		16		836.694	
	Raigoda 1 to 16	<b>G. Total</b>		<b>4294.408</b>	
2.	Tulka R.F.	1	1a	320.951	
			1b	7.00	
		1		327.951	
		2	2a	329.135	
			2b	22.870	
		2		352.005	
		3	3a	239.057	
			3b	5.000	
		3		244.057	
		4	4a	342.352	
			4b	12.000	
		4		354.352	
		5		212.111	
		6	6a	194.776	
			6b	14.080	

		6		208.856	
		7	7a	372.540	
			7b	72.740	
		8	8a	282.190	
				48.690	
		8		330.880	
		9	9a	124.440	
			9b	80.900	
		9		205.340	
		10		586.78	
		11	11a	260.65	
			11b	9.86	
		11		270.51	
		12	12a	543.610	
			12b	34.250	
		12		577.860	
	Tulka 1 to 12	<b>G. Total</b>		<b>4115.982</b>	
3	Bolong RF	1	1a	255.640	
			1b	22.304	
		1		277.944	
		2	2a	327.128	
			2b	22.304	
		2		349.432	
		3		224.757	
		4	4a	225.797	
			4b	47.0	
		4		272.797	
		5	5a	268.670	
			5b	23.0	

		5		291.670	
		6	6a	182.776	
			6b	62.0	
		6		244.776	
		7	7a	334.687	
			7b	10.170	
		8	8a	134.008	
			8b	49.0	
		8		183.008	
		9	9a	268.814	
			9b	24.0	
		9		292.814	
		10	10a	187.012	
			10b	26.307	
		10		213.319	
		11	11a	281.371	
			11b	60.055	
		11		341.426	
		12	12a	319.563	
			12b	15.0	
		12		334.563	
		13	13a	272.797	
			13b	72.060	
		13		344.857	
	Bolong 1 to 13	<b>G. Total</b>		<b>3716.22</b>	
4.	Jacob R.F.	1		179.580	
		2	2a	300.530	
			2b	28.320	
		2		328.850	
		3		339.710	

		4		239.620	
		5		263.080	
		6	6a	198.090	
			6b	10.09	
		6		208.180	
	Jacob 1 to 6	<b>G. Total</b>		<b>1559.02</b>	
5.	Takarsingha R.F.	1	1a	298.151	
			1b	21.0	
		1		319.151	
		2	2a	316.567	
			2b	128.480	
		2		445.047	
		3	3a	310.098	
			3b	29.0	
		3		339.098	
		4		475.207	
	Takarsingha 1 to 4	<b>G. Total</b>		<b>1578.503</b>	
6.	Purunakote RF	1		234.87	
		2		246.99	
		3		333.23	
		4	4a	215.39	
			4b	14.0	
		4		229.39	
		5		340.85	
		6		210.610	
		7	7a	220.591	
			7b	54.560	
		7		275.151	
		8	8a	113.460	
			8b	23.820	
		8		137.280	

		9	9a	190.360	
			9b	12.040	
		9		202.400	
		10		422.990	
		11		404.210	
		12		300.370	
		13		211.200	
		14		184.802	
		15	15a	391.901	
			15b	65.706	
		15		457.6.7	
		16	16a	345.940	
			16b	78.220	
		16		424.160	
		17		214.130	
		18		481.660	
		19		524.480	
		20		370.192	
	Purunakote 1 to 20	<b>G .Total</b>		<b>6206.372</b>	
7.	Chhotamunda RF	1		233.670	
		2		231.910	
		3	3a	410.413	
			3b	73.30	
		3		483.413	
		4	4a	151.922	
			4b	10.0	
		4		161.922	
		5		390.726	
	Chhotamunda1 to 5	<b>G. Total</b>		<b>1501.941</b>	
8	Tikarpada RF	1		270.510	
		2		313.980	

		3		499.590	
		4		253.353	
		5	5a	240.898	
			5b	10.886	
			5c	70.682	
		5		322.466	
		6	6a	171.924	
			6b	82.0	
		6		253.924	
		7	7a	200.755	
			7b	52.056	
		7		252.781	
		8		307.071	
		9	9a	208.273	
			9b	8.210	
			9c	79.201	
		9		295.684	
	Tikarpada 1 to 9	<b>G. Total</b>		<b>2769.359</b>	
9	Katrang RF	1	1a	292.36	
			1b	8.53	
		1		300.89	
		2	2a	254.760	
			2b	48.930	
		2		303.690	
		3	3a	385.06	
			3b	6.07	
		3		391.13	
		4		288.23	
		5		262.93	
		6		615.14	
		7	7a	509.0	



			7b	14.0	
		7		523.900	
		8	8a	283.764	
			8b	7.00	
		8		290.764	
		9		470.367	
		10		476.767	
		11	11a	503.178	
			11b	10.510	
			11c	122.028	
		11		635.716	
	Katrang 1 to 11	<b>G. Total</b>		<b>4558.524</b>	
10	Baghamunda RF	1	1a	521.33	
			1b	109.89	
		1		631.22	
		2		203.22	
		3	3a	389.20	
			3b	14.0	
		3		403.20	
		4		238.48	
		5		258.50	
		6		342.18	
		7	7a	230.78	
			7b	19.42	
		7		250.20	
		8		413.82	
		9	9a	259.63	
			9b	60.37	
		9		320.00	
		10		101.62	
		11		255.25	

		12	12a	99.67	
			12b	50.99	
		12		150.66	
		13	13a	272.68	
			13b	11.25	
		13		283.93	
	Baghamunda RF 1 to 13	<b>G. Total</b>		<b>3852.28</b>	
11	Majhipara RF	1		213.32	
		2		386.61	
		3		344.76	
		4	4a	385.46	
			4b	5.719	
		4		391.180	
		5		308.30	
		6		351.94	
		7		307.13	
		8		360.30	
		9		200.97	
		10	10a	284.00	
			10b	38.0	
		10		322.0	
		11	11a	388.2	
			11b	12.0	
		11		400.2	
		12	12a	246.304	
			12b	28.740	
		12		275.044	
		13	13a	219.968	
			13b	0.342	
		13		220.310	

		14	14a	103.848	
			14b	37.540	
		15	15a	146.512	
			15b	42.290	
		15		188.802	
		16		164.855	
		17		305.764	
	Majhipara 1 to 17	<b>G .Total</b>		<b>4882.873</b>	
12	Kuru RF	1	1a	178.629	
			1b	23.60	
		1		202.229	
		2	2a	210.616	
			2b	18.62	
		2		229.236	
		3	3a	175.923	
			3b	74.0	
		3		249.923	
		4	4a	356.322	
			4b	29.910	
		4		386.232	
		5	5a	265.474	
			5b	33.970	
		5		299.444	
		6	6a	162.369	
			6b	54.550	
		6		216.919	
		7	7a	164.406	
			7b	48.690	
		7		213.096	
		8		160.922	
		9	9a	138.429	

			9b	45.2	
		9		183.629	
	Kuru 1 to 9	<b>G. Total</b>		<b>2141.63</b>	
13	Tainsi RF	1	1a	235.550	
			1b	61.570	
			1c	8.280	
		1		305.400	
		2	2a	85.4	
			2b	175.51	
		2		260.91	
		3	3a	80.7	
			3b	68.3	
		4	4a	140.92	
			4b	45.80	
			4c	32.38	
		4		219.10	
		5	5a	130.66	
			5b	54.54	
		6	6a	112.570	
			6b	25.0	
		6		137.57	
		7		272.23	
		8		234.000	
		9	9a	245.84	
			9b	12.14	
		9		257.98	
		10	10a	130.01	
			10b	107.65	
		10		237.66	
	Tainsi 1 to 10	<b>G. Total</b>		<b>2259.05</b>	
14	Kumuri RF	-	-	<b>330.53</b>	

15	Majhipada PRF	-	-	<b>810.50</b>	
16	Tikarpada PRF	a	-	<b>207.928</b>	
		b		<b>50.0</b>	
				<b>257.928</b>	
17	Purunakote DPF	-	-	<b>136.690</b>	
18	Katrang DPF	-	-	<b>217.070</b>	
19	Baghamunda DPF	-	-	<b>42.890</b>	
20	Tainsi DPF	-	-	<b>160.150</b>	
21	Kantabeda PRF	-	-	<b>188.300</b>	

### APPENDIX-30

#### **CONSTITUTION OF ZONES BY COMPARTMENTS AND AREA** **STATEMENT FOR EACH ZONE.**

	Sl. No.	Name of Zone	Extent of area in Sq.Km.
CORE ZONE	1.	Wilderness Zone	565.078
	2.	Eco Development Zone	183.746
	3.	Eco Tourism Zone	44.972
	4.	Restoration Zone	<u>1.724</u>

		Total	795.52
BUFFER ZONE	1.	Wilderness Zone	100.14
	2.	Ecodevelopment Zone	<u>79.27</u>
		Total	179.41

### CORE AREA

Name of Division	Name of R.F.	Compartment	Area in Ha.
Satkosia W.L. Division, Angul.			
CORE-I.	Tikarpada	1 to 9	2760.45
	Purunakote (p)	2,3,8,11 to 20	4915.501
	Tulka (p)	1 to 10	3275.612
	Balanga (p)	11 and 12	675.98
	Jocub	1 to 6	1514.79
	Takarsinga (p)	2,3 and 4	1259.352
	Raigoda(p)	1,2,4 to 15	3818.299
	Katrang (p)	1 to 8,10 & 11	4088.157
	Jorum (p)	Block-1	886.06
	Mahanadi River (p)	-	1037.05
			<b>24,231.251</b>
CORE-II	Majhipada	1 to 17	4890.80
	Baghamunda	1 to 13	3812.67
	Kuru	1 to 9	2116.98
	Hatidhara (p)	23 to 27	1397.92
Mahanadi W.L. Division, Nayagarh			
CORE-III	Padmatola	1 to 11	4674.00
	Mahanadi	1 to 17	10283.70
		Total	<b>14957.70</b>
		Grand Total	51,407.321 Ha. Or <b>514.073</b> Sq.Kms.

Sl.No.	Name of the village/Hamlet village	District	Area in Ha.	Population	Year of settlement
1	2	3	4	5	6
1	Takarsinga	Angul	347.65	498	1962
2	Kulangi	-do-	176.85	300	1962
3	Jagannathapur	-do-	688.75	1171	1962
4	Hinsirida	-do-	156.37	269	1962
5	Kumbharabhuin (Hamlet)	-do-	-	-	1962
6	Ramimunda	-do-	517.00	138	1962
7	Pampasar	-do-	172.49	171	1962
8	Jocub	-do-	205.62	74	1962
9	Badakheta	-do-	90.24	100	1962
10	Salor	-do-	123.40	90	1962
11	Purunakote	-do-	358.39	766	1962
12	Chhotkei	-do-	234.61	434	1962
13	Tulka	-do-	225.01	455	1962
14	Majhipada	-do-	383.87	170	1962
15	Beherasahi	-do-	237.87	177	1962
16	Goindi	-do-	82.74	308	1962
17	Karadapada	-do-	150.91	415	1962
18	Hatibari	-do-	281.80	443	1962
19	Tikarpada	-do-	152.07	684	1962
20	Katrang	-do-	397.39	276	1962
21	Gopalpur	-do-	140.66	316	1962
22	Raigoda	-do-	172.43	185	1962
23	Tarava (F.V.)	-do-	126.00	250	1910
24	Asanbahal (F.V.)	-do-	32.00	114	1933
25	Bhurkundi (F.V.)	-do-	111.00	189	1914
26	Doruha	-do-	216.91	101	1962
27	Malisahi	-do-	84.58	201	1962

28	Jamudoli	-do-	242.81	640	1962
29	Kudasinga	-do-	54.63	93	1962
30	Nilamara	-do-	55.04	76	1962
31	Limbadihi	-do-	162.68	488	1962
32	Luhasinga	-do-	359.36	771	1962
33	Dolamundi	-do-	89.44	191	1962
34	Karadasinga	-do-	78.51	267	1962
35	Ragudisahi ( Hamlet)	-do-	-	-	1962

### CUTTACK DISTRICT .

1	2	3	4	5	6
36	Baliput	Cuttack	199.36	284	1995
37	Silati (Hamlet)	-do-	-	-	1995
38	Kamaladihi	-do-	220.08	2181	1995
39	Ranibhuin	-do-	189.32	511	1995
40	Panchama	-do-	901.89	713	1995
41	Kaintara	-do-	170.65	215	1995
42	Nuagaon	-do-	406.00	265	1995
43	Paikaregeda	-do-	748.87	418	1995
44	Satyajayapur	-do-	686.47	530	1995
45	Dhanurjayapur	-do-	638.97	412	1995
46	Sampur	-do-	221.42	130	1995
47	Kunjabanapur	-do-	40.70	192	1995
48	Janisahi	-do-	156.74	1149	1995
49	Regeda	-do-	182.26	1512	1995
50	Talasaahi	-do-	138.53	786	1995
51	Chikanakhandi	-do-	139.34	363	1995
52	Sanagaon	-do-	217.16	991	1995
53	Jillinda	-do-	327.00	1159	1995
54	Mahigarh	-do-	100.36	692	1995
55	Mandania	-do-	245.24	560	1995



56	Ambakhola (Hamlet )	-do-	-	-	1995
	<b>Total of Cuttack Dist.</b>		<b>5,830.36</b>	<b>13063</b>	

**MAHANADI WILDLIFE DIVISION, NAYAGARH ,BOUDH DISTRICT.**

57	Ghungurpada	Boudh	141.24	111	1989
58	Hatigarh	-do-	91.68	250	1989
59	Nuapada	-do-	95.54	132	1989
60	Kumari	-do-	755.39	1203	1989
61	Bhapur	-do-	399.65	389	1989
62	Budhamba	-do-	77.88	144	1988
63	Semiguda	-do-	59.03	14	1988
64	Siripaju	-do-	189.55	78	1988
65	Geredisahi	-do-	166.33	279	1989
66	Nandagadu	-do-	152.57	75	1989
67	Satakhanda	-do-	384.82	451	1990
68	Hinjal	-do-	109.74	206	1989
69	Kutibari	-do-	140.84	246	1989
70	Marada	-do-	29.94	57	1989
71	Atalasara	-do-	420.44	281	1990
72	Sitalapani	-do-	294.56	295	1989
73	Sunakhania	-do-	-	-	1988
74	Ghatgaon	-do-	-	-	1988
	<b>Total of Boudh District</b>		<b>5,530.15</b>	<b>3,916</b>	

NAYAGARH DISTRICT

75	Kuturi	Nayagarh	117.36	107	1985
76	Malisahi	-do-	80.55	180	1985
77	Badamul	-do-	323.86	207	1985
78	Bethiasahi	-do-	66.48	247	1985

79	Muduligadia	-do-		97	1985
80	Kandhajilinda	-do-	345.04	57	1985
81	Chhamundia	-do-	412.42	1069	1985
82	Haripur	-do-	156.82	414	1985
83	Kanipokhari	-do-	196.44	105	1985
84	Khalisahi	-do-		161	1985
85	Bantapada	-do-	216.32	391	1985
86	Iswarpur	-do-	202.85	526	1985
87	Maskajholi	-do-	46.39	96	1985
88	Raigadia	-do-	34.08	216	1985
89	Mohanpada	-do-		232	1985
90	Dasipur	-do-		48	1985
91	Rajingi	-do-	69.79	534	1985
92	Dhobabarei	-do-	50.30	170	1985
93	Kumbhirakhani	-do-	117.04	565	1985
94	Salapaganda	-do-	9.31	35	1985
95	Musuguda	-do-	4.45	22	1985
96	Malasapadar	-do-	27.52	24	1985
97	Sagadabhanga	-do-	20.64	25	1985
98	Bahali	-do-	23.47	-	1985
	<b>Total of Nayagarh Dist.</b>		<b>7,741.59</b>	<b>5,528</b>	

### APPENDIX-31

#### CONSTITUTION OF BUFFER ZONE BY COMPARTMENTS AND AREA AND OR BY REVENUE SURVEY NOS.

Name of the village	District	Division	Area ( in Ha.)	Population	Year of settlement
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Barabhaya	Cuttack	Athagarh	199	414	1995
Kusal	Cuttack	Athagarh	92	09	1995
Balikiary	Cuttack	Athagarh	188	291	1995
Chakamunda	Cuttack	Athagarh	314	1269	1995
Sisupathar	Cuttack	Athagarh	398	546	1995
Maradamukha	Cuttack	Athagarh	198	558	1995
Kharuani	Cuttack	Athagarh	26	108	1995
Marudiha	Cuttack	Athagarh	25	72	1995
Nuakheta	Angul	Angul	1045	1417	1962
Balanga	Angul	Angul	227	1149	1962
Talasira	Angul	Angul	186	458	1962
Labangi	Angul	Angul	230	70	1962
Pampasar	Angul	Angul	172	171	1962
Hidsing	Angul	Angul	270	296	1962
Hinsrida	Angul	Angul	156	269	1962
Burti	Angul	Angul	247	366	1962
Jagannathpur	Angul	Angul	689	1171	1962
Tainsi	Angul	Angul	1071	1724	1962
Kamarsahi	Angul	Angul			1962
Kumuri	Angul	Angul	174	412	1962
Tendulipada	Angul	Angul	128	76	1962
Hinjagola	Angul	Angul	207	281	1962
Kulsar	Angul	Angul	155	264	1962
Krushnachakra	Angul	Angul	235	242	1962

Laimunda	Angul	Angul	76	124	1962
Baghmunda	Angul	Angul	417	236	1962
Hinjadoli	Angul	Angul	131	188	1962
Nuapada	Angul	Angul	326	580	1962
Olaberi	Angul	Angul	91	132	1962
Kantabeda	Angul	Angul	390	527	1962
Baragotha	Angul	Angul	281	198	1962
Badataila	Angul	Angul	75	235	1962
Bhagatpur	Angul	Angul	186	557	1962
Dandasinga	Angul	Angul	98	281	1962
Lakshmanpur	Angul	Angul	133	458	1962
Bhalumunda	Angul	Angul	78	127	1962
Ganjada	Angul	Angul	760	1146	1962
Kadaliberini	Angul	Angul	97	401	1962
Kothabhuin	Angul	Angul	565	902	1962
Sankrida	Angul	Angul	204	124	1962
Dalaki	Angul	Angul	155	219	1962
Dalasinga	Angul	Angul	224	583	1962
Thukuli	Angul	Angul	89	0	1962
Hinsaloi	Angul	Angul	70	59	1962
Sorispala	Angul	Angul	68	150	1962
Khalisahi	Nayagarh	Nayagarh	173	138	1985
Khajuridiha	Nayagarh	Nayagarh	89	125	1985
Champadali	Nayagarh	Nayagarh	139	167	1985

Siligadi	Nayagarh	Nayagarh	167	117	1985
Raimara	Nayagarh	Nayagarh	276	285	1985
Tulikutapia	Nayagarh	Nayagarh	83	62	1985
Sakin	Nayagarh	Nayagarh	114	43	1985
Dhipasahi	Nayagarh	Nayagarh	101	185	1985
Kendudhipi	Nayagarh	Nayagarh	42	0	1985
Gergedi	Nayagarh	Nayagarh	59	57	1985
Purunapani	Nayagarh	Nayagarh	59	89	1985
Gochhabari	Nayagarh	Nayagarh	163	244	1985
Dhupaju	Nayagarh	Nayagarh	106	133	1985
Badasilinga	Nayagarh	Nayagarh	328	481	1985
Sikhargochha	Nayagarh	Nayagarh	134	177	1985
Janakjhola	Nayagarh	Nayagarh	22	12	1985
Khalighati	Nayagarh	Nayagarh	348	134	1985
Janisahi	Nayagarh	Nayagarh	69	79	1985
Sansilinga	Nayagarh	Nayagarh	44	8	1985
Dumduma	Nayagarh	Nayagarh			1985
Tailasahi	Nayagarh	Nayagarh			1985
Parhasahi			7929	11038	
Total			7927		

**The following Forest Blocks are coming under the Buffer Zone:**

Name of the Forest Blocks	District	Division	Area ( in Ha.)
Balikiary RF	Cuttack	Athagarh	5460

Sisupathar PF	Cuttack	Athagarh	
Nuagarh RF	Cuttack	Athagarh	4220
Nandinia RF	Dhenkanal	Dhenkanal	641.85
Nuakheta RF	Angul	Angul	3000.8
Balonga RF Cpt.No.1 to 10 ,13	Angul	Angul	3040.23
Kumuri RF	Angul	Satkosia (WL)	337.52
Kumuri R.F.	Angul	Satkosia Wildlife	337.52
Bhogapal RF	Angul	Angul	184. 72
Labangi DPF	Angul	Angul	69.78
Krushnachakra RF	Angul	Angul	2515.8
Hatidhara RF Cpt.No.1 to 22	Angul	Athamallik	5938.81
Makarprasad DPF	Nayagarh	Nayagarh	1152.5
Total			10014.41
Total buffer area			17941.41 Ha. 179.41 Sq. Kms.

### APPENDIX-32

### EXISTING PATTERN OF STAFF BY HIERARCHICAL LEVEL AND SCALES OF PAY.

Name of the Division	Name of the post	Scale of pay	Sanctioned strength	Staff in position	Vacancy position
Satkosia Wildlife Division, Angul	DFO		1	1	-
	ACF		1	1	-
	R. O.		7	4	3
	DY.R.O.		1	1	-
				14	8

FORESTER	22	25	34
F.G.	59	3	3
G.G.	6	4	-
Bungalow	4	1	-
Choukidar	1	-	1
Pool Attendant	1	-	1
Pumpman	1	1	-
Jr. Vet Officer	1	4	-
V.A.S.	1	6	1
Head Clerk	1	1	-
Accountant	4	2	-
Sr. clerk	7	1	-
Jr. clerk	1	5	-
Stenographer	1	1	-
Amin	2	1	-
Driver	1	1	-
F.E.O.	5		
V.F.W.	1		
Office	1		
Choukidar	1		
Office peon	1		
Mali			
Sweeper			

**APPENDIX-33**

**LIST OF SURVEY OF INDIA (S.I.) TOPOSHEETS WITH SCALE ,  
COVERING ,MANAGEMENT JURISDICTION.**

Sl.No.	Toposheet No.	SCALE
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<b>1</b>	<b>73D/14</b>	<b>1:50,000</b>
<b>2</b>	<b>73D/10</b>	<b>1:50,000</b>
<b>3</b>	<b>73D/15</b>	<b>1:50,000</b>
<b>4</b>	<b>73D/13</b>	<b>1:50,000</b>
<b>5</b>	<b>73D/9</b>	<b>1:50,000</b>
<b>6</b>	<b>73H/2</b>	<b>1:50,000</b>

**APPENDIX-34**

**LIST OF SURVEY OF INDIA (S.I.) TOPOSHEETS WITH SCALE , ON WHICH STOCK ARE AVAILABLE.**

<b>Sl.No.</b>	<b>Toposheet No.</b>	<b>SCALE</b>	<b>Qty</b>
<b>1</b>	<b>73D/7</b>	<b>1:50,000</b>	<b>3</b>
<b>2</b>	<b>73D/1</b>	<b>1:50,000</b>	<b>3</b>
<b>3</b>	<b>73D/5</b>	<b>1:50,000</b>	<b>5</b>
<b>4</b>	<b>73D/6</b>	<b>1:50,000</b>	<b>5</b>
<b>5</b>	<b>73D/7</b>	<b>1:50,000</b>	<b>5</b>
<b>6</b>	<b>73D/8</b>	<b>1:50,000</b>	<b>3</b>
<b>7</b>	<b>73D/9</b>	<b>1:50,000</b>	<b>9</b>
<b>8</b>	<b>73D/10</b>	<b>1:50,000</b>	<b>5</b>
<b>9</b>	<b>73D/11</b>	<b>1:50,000</b>	<b>1</b>
<b>10</b>	<b>73D/12</b>	<b>1:50,000</b>	<b>3</b>
<b>11</b>	<b>73D/13</b>	<b>1:50,000</b>	<b>8</b>
<b>12</b>	<b>73D/14</b>	<b>1:50,000</b>	<b>6</b>
<b>13</b>	<b>73D/15</b>	<b>1:50,000</b>	<b>8</b>
<b>14</b>	<b>73H/2</b>	<b>1:50,000</b>	<b>7</b>
<b>15</b>	<b>73H/3</b>	<b>1:50,000</b>	<b>5</b>
<b>16</b>	<b>73H/6</b>	<b>1:50,000</b>	<b>5</b>
<b>17</b>	<b>73H/7</b>	<b>1:50,000</b>	<b>5</b>
<b>18</b>	<b>73H/10</b>	<b>1:50,000</b>	<b>3</b>
<b>19</b>	<b>73H/11</b>	<b>1:50,000</b>	<b>3</b>
<b>20</b>	<b>73H/14</b>	<b>1:50,000</b>	<b>3</b>
<b>21</b>	<b>73H/15</b>	<b>1:50,000</b>	<b>3</b>
<b>22</b>	<b>73H/16</b>	<b>1:50,000</b>	<b>3</b>
<b>23</b>	<b>73L/1</b>	<b>1:50,000</b>	<b>3</b>
<b>24</b>	<b>73L/2</b>	<b>1:50,000</b>	<b>3</b>
<b>25</b>	<b>73L/3</b>	<b>1:50,000</b>	<b>3</b>
<b>26</b>	<b>73L/4</b>	<b>1:50,000</b>	<b>3</b>
<b>27</b>	<b>73L/5</b>	<b>1:50,000</b>	<b>3</b>
<b>28</b>	<b>73L/6</b>	<b>1:50,000</b>	<b>3</b>
<b>29</b>	<b>73L/7</b>	<b>1:50,000</b>	<b>3</b>



30	73L/8	1:50,000	3
31	73L/9	1:50,000	3
32	73L/10	1:50,000	3
33	73L/11	1:50,000	3
34	73L/12	1:50,000	1
35	73L/13	1:50,000	3
36	73L/14	1:50,000	3
37	73L/15	1:50,000	3
38	64P/13	1:50,000	3
39	64/O/15	1:50,000	3
40	64/O/16	1:50,000	3

Sl.No.	Toposheet No.	SCALE	Qty.
1	73D/	1:2,50,000	2
2	73H/	1:2,50,000	2

#### APPENDIX-35

### LIST OF LATEST ARIAL PHOTOGRAPHS WITH SPECIFICATION AND SCALE

INFORMATION WILL BE COLLECTED DURING PLAN PERIOD.

#### APPENDIX-36

### LIST OF SATELLITE IMAGERIES SPECIFICATION AND SCALE

INFORMATION WILL BE COLLECTED DURING PLAN PERIOD.

#### APPENDIX-37

**LIST OF NATURAL AND ARTIFICIAL, PERENNIAL WATER SOURCES  
BY CATEGORY AND BY COMPARTMENT NUMBERS**

Cpt. No.	Reservoir	Swamp	Stream	Spring	Stag nant pool	Seep	Aquifer	Anicut
1	2	3	4	5	6	7	8	9

SI No	Name of nala	River basin	District
1	Bauli nalla	Brahmani	Angul
2	Asanbahal	Mahanadi	Angul
3	Dimiri	Mahanadi	Angul
4	Khalkhala	Mahanadi	Angul
5	Purunapani	Mahanadi	Nayagarh
6	Nandini	Mahanadi	Angul
7	Baniajore	Brahmani	Angul
8	Duhanjore	Mahanadi	Angul
9	Satbhenia	Mahanadi	Angul
10	Sarimother	Mahanadi	Angul
11	Ghoda Pathar	Mahanadi	Angul
12	Kurut garh	Mahanadi	Angul
13	Chupu	Mahanadi	Angul
14	Ramagaon	Mahanadi	Angul
15	Ramkut	Mahanadi	Angul

16	Halua	Mahanadi	Angul
17	Bhimdhara	Mahanadi	Angul
18	Satidhara	Mahanadi	Angul
19	Burma	Mahanadi	Angul
20	Khali	Mahanadi	Angul
21	Marada	Mahanadi	Boudh
22	Udandai	Mahanadi	Boudh
23	Sitalpani	Mahanadi	Boudh
24	Nimandi	Mahanadi	Nayagarh
25	Mudligadia	Mahanadi	Nayagarh
26	Shankarjhuli	Mahanadi	Nayagarh
27	Rajing	Mahanadi	Nayagarh

**INFORMATION WILL BE COLLECTED DURING PLAN PERIOD.**

**APPENDIX-38**

**LIST OF OVER HANGS & CAVES**

<b>Compt.No.</b>	<b>Over hangs</b>	<b>Caves</b>
<b>INFORMATION WILL BE COLLECTED DURING PLAN PERIOD.</b>		

**APPENDIX-39**

**RAIN FALL DATA.**

Rainfall in m.m. at Tikarapada

Month	2004	2005	2006
Jan	12.8	15.0	-
Feb	18.8	1.0	-
Mar	1.8	33.6	21.6
Apr	85.0	16.4	9.9
May	48.0	32.8	35.6
June	150.6	170.0	106.2
July	423.8	628.2	224.1
Aug	120.2	480.4	597.1
Sept	132.4	440.6	180.6
Oct	130.0	242.9	11.8
Nov	0	1.0	11.4
Dec	0	0	-
Total	1123.4	2061.9	1198.3

**APPENDIX-40**

**TEMPERTURE DATA.**

AVERAGE ANNUAL TEMPERATURE IN ANGUL DISTRICT														
Month	1989		1990		1991		1992		1993		1994		1995	
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
Jan	28.6	13.2	30.4	11.3	30.9	14.4	32.2	9.2	30.4	11.1	30.8	12.6	25.9	15.8
Feb	29.2	7.6	29.8	17.6	33.1	11.2	30.8	9.4	32.2	16.4	30.5	15.3	31.9	18.6
Mar	39.4	19.2	40.7	17.4	38.6	18.3	40.1	23.4	38.3	16.2	38.9	19.9	35.6	21.7

<b>Apr</b>	38.8	22.3	40.3	19.5	40.7	14.4	39.6	21.2	38.4	17.1	38.5	22.3	39.2	23.4
<b>May</b>	40.3	20.2	41.4	18.9	40.7	23.8	42.2	26.4	40.2	22.1	40.2	24.3	36.4	23.8

<b>June</b>	34.8	15.4	36.3	22.2	33.4	19.2	37.8	21.2	40.4	21.2	33.8	22.8	36.8	24.1
<b>July</b>	31.2	23.2	29.6	20.2	30.4	21.6	32.3	24.4	30.4	21.2	30.8	22.1	32.5	22.3
<b>Aug</b>	33.4	22.3	33.1	19.6	30.2	23.2	34.4	24.6	32.2	20.6	30.8	21.7	32.5	22
<b>Sept</b>	32.2	21.2	30.1	18.4	33.4	24.2	29.6	21.2	30.3	18.4	32.8	21.5	32.5	21.5
<b>Oct</b>	33.4	12.2	33.2	20.1	31.4	18.6	33.1	19.2	30.4	14.2	33.1	19.1	31.7	19.2
<b>Nov</b>	30.3	13.2	31.1	18.6	32.4	22.2	30.6	15.4	29.4	12.2	30.7	16.7	29.6	16.1
<b>Dec</b>	28.4	11	29.2	14.4	30.1	16.2	29.2	12.6	29.3	11.1	28.5	14.3	29.8	14.9

<b>Month</b>	<b>1996</b>		<b>1997</b>		<b>1998</b>		<b>1999</b>		<b>2000</b>		<b>2001</b>	
	<b>Max</b>	<b>Min</b>	<b>Max</b>	<b>Min</b>	<b>Max</b>	<b>Min</b>	<b>Max</b>	<b>Min</b>	<b>Max</b>	<b>Min</b>	<b>Max</b>	<b>Min</b>
<b>Jan</b>	29.2	19.5	31.1	18	31.3	11.8	33.1	8.5	34.1	16.6	35.5	9.2
<b>Feb</b>	32.3	20.5	36.5	18.6	36.1	12.8	39.5	14	36.7	20.2	38.1	11.2
<b>Mar</b>	37.8	13.1	40.1	NA	38.7	15	22.5	15.6	38.9	11.2	41.7	16.6
<b>Apr</b>	39.8	10.6	41.1	NA	41.7	21.2	46.1	21	43.3	23.1	45.1	19.6
<b>May</b>	41.6	12.5	43	NA	46.7	21.8	45.7	20	42.9	21.8	45.5	20.6
<b>June</b>	34.9	12.9	43.1	NA	46.7	22.6	40.7	22.4	38	26	39.2	21.4
<b>July</b>	32.1	13.4	29.5	NA	36.9	23	36.7	20.4	31	25	34.7	20.2
<b>Aug</b>	31.7	12.7	43.7	15.6	35.1	23.6	35.3	21.6	33	24	33.5	22.4
<b>Sept</b>	34.2	13.2	29.1	23.6	35.9	21.8	35.1	21.2	33	24	34	25
<b>Oct</b>	33.2	10.1	34.9	20	35.5	20.6	35.1	20	34	23	35.1	19.8
<b>Nov</b>	31.9	5.5	35.1	19	34.1	13	33.7	14	32	17	35.1	15.4
<b>Dec</b>	28.1	<b>6.7</b>	30.3	14.6	32.1	9.8	30.1	12	28	10	30.9	10

<b>Month</b>	<b>2002</b>		<b>2003</b>		<b>2004</b>		<b>2005</b>		<b>2006</b>	
	<b>Max</b>	<b>Min</b>	<b>Max</b>	<b>Min</b>	<b>Max</b>	<b>Min</b>	<b>Max</b>	<b>Min</b>	<b>Max</b>	<b>Min</b>

<b>Jan</b>	28	12	31.2	13.3	27	11.5	29	11	26.48	14.40
<b>Feb</b>	32	16	33.2	16.4	23.5	16	36	14	32.10	14.30
<b>Mar</b>	40.4	18.2	41.6	18.2	37	20.5	42	21	35.79	22.58
<b>Apr</b>	39	26	43.7	24.7	43	27.5	45	24.5	42.08	27.71
<b>May</b>	42	27	44.6	22.4	43	29.5	<b>49</b>	25	40.14	28.08
<b>June</b>	39	26	42.8	26.4	40	29	47.5	25	36.33	27.78
<b>July</b>	35	26	36.6	25.6	36	26.5	38	25	32.54	26.03
<b>Aug</b>	33	25	32.2	21.1	35	24	37	24	29.91	25.37
<b>Sept</b>	34	24	35.2	22.2	35.5	27	37	24.5	30.63	25.56
<b>Oct</b>	33.9	22.4	34.6	23.3	33	21	30	15	30.80	23.96
<b>Nov</b>	33	20.6	34.4	19.6	30	14	30	14	27.75	20.03
<b>Dec</b>	29.8	9.6	30.4	11	29	11	29	11	18.19	15.90

#### APPENDIX-41

#### LIST OF NATURAL AND ARTIFICIAL SALT LICKS

COMPARTMENT NO	SALT LICKS
	1. Kandhaida
	2. Kadalikhola
	3. Routbahal
	4. Buchunda Bhogra
	5. Ranibandha
	6. Kantarsinga,
	7. Takarsingha,
	8. Paintiri,
	9. Dihasahi,
	10. Hatigirija.
	11. Rasanda
	12. Khujurinala
	13. Nadapathar
	14. Padmatola.

	15. Chhotkei 2 nos.(W.H.S.& Srota India) 16. Badkheta 17. Raigoda 18. Ramimunda 19. Tulka 20. Chhamundia 21. Sitalpani 22. Dihasahi & Asanbahal 23. Bhurkundi
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**APPENDIX-42**

**LIST OF WETLANDS.**

COMPARTME NT NO	WETLANDS	Area
<b>INFORMATION WILL BE COLLECTED DURING PLAN PERIOD</b>		

**APPENDIX-43**

**LIST OF PLANTATIONS.**

**APPENDIX-44**

**LIST OF MAMALS.**

As in appendix 7 of MP

**APPENDIX-45**

**LIST OF BIRDS.**

As in appendix 8 of MP **APPENDIX-46**

**LIST OF AMPHIBIANS**

AS IS IN APPENDIX 11 OF MANAGEMENT PLAN

**APPENDIX-47**

**LIST OF REPTILES.**

AS IS IN APPENDIX 9 OF MANAGEMENT PLAN

**APPENDIX-48**

**LIST OF FISHES.**

AS IS IN APPENDIX 10 OF MANAGEMENT PLAN

**APPENDIX-49**

**LIST OF IMPORTANT IVERTEBRATES.**

AS IS IN APPENDIX 12 OF MANAGEMENT PLAN

**APPENDIX-50**

**LIST OF PLANTS, TREES, SHRUBS, CLIMBERS, HERBS.**

AS IS IN APPENDIX 6 OF MANAGEMENT PLAN

**APPENDIX-51**



**LIST OF PLANT SPECIES THAT SERVE AS FOOD FOR HERBIVOURS.**

**INFORMATION WILL BE COLLECTED DURING THE PLAN PERIOD**

**APPENDIX-52**

**LIST OF PLANT SPECIES OF ETHNOBOTANICAL & CULTURAL  
VALUE**

**INFORMATION WILL BE COLLECTED DURING THE PLAN PERIOD**

**APPENDIX-53**

**LIST OF KEY AREAS AND SENSITIVE SITES WITH LOCATIONS BY  
COMPARTMENT NUMBERS.**

**INFORMATION WILL BE COLLECTED DURING THE PLAN PERIOD**

**APPENDIX-54**

**SPECIES WISE POPULATION ESTIMATION DATA FOR HERBIVORES**

**INFORMATION WILL BE COLLECTED DURING THE PLAN PERIOD**

**APPENDIX-55**

**SPECIES WISE POPULATION ESTIMATION DATA FOR CARNIVORES**

**APPENDIX-56**

**CONSTITUTION OF AREA UNDER A SPECIFIC SILVICULTURAL  
SYSTEM, SQUENCE OF FELLING TENDING.**

**INFORMATION WILL BE COLLECTED DURING THE PLAN PERIOD**

**APPENDIX-57**

**LIST OF PRESERVATION PLOTS.**

<b>Year of Estt.</b>	<b>Location</b>	<b>Extent</b>	<b>Treatment</b>

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INFORMATION WILL BE COLLECTED DURING THE PLAN PERIOD

APPENDIX-58

**LIST OF SAMPLE PLOTS.**

Year of Estt.	Location	Extent	Treatment

INFORMATION WILL BE COLLECTED DURING THE PLAN PERIOD

APPENDIX-59

**CONSTITUTION OF BAMBOO WORKING CIRCLE.**

Compartment	Area	Cuttimng series	Remarks
	Not	Required	

APPENDIX-60

**LIST OF COMPARTMENT HISTORY.**

INFORMATION WILL BE COLLECTED DURING THE PLAN PERIOD

APPENDIX-61

**LIST OF FIREWOOD COUPE.**

Compartment	Area	Cuttimng series	Remarks
	Not	Required	

APPENDIX-62

**LIST OF NON WOOD FOREST PRODUCTS(NWP).**

Compartment	Area	Cuttimng series	Remarks
	<b>Not</b>	<b>Required</b>	

**APPENDIX-63**

**LIST OF LEASES /AGENCY.**

Compartment Area	Year	Lease	Agency
	<b>Not</b>	<b>Required</b>	

**APPENDIX-64**

**LIST OF SPECIES WISE OUTTRURN.**

Timber	Poles	Bamboo	Firewood	Revenue collected

**INFORMATION WILL BE COLLECTED DURING THE PLAN PERIOD**

**APPENDIX-65**

**LIST OF TIMBER SALE DEPOT.**

**Not Required**

**APPENDIX-66**

**LIST OF BAMBOO DEPOT.**

**Not Required**

**APPENDIX-67**

**LIST OF FIRE WOOD DEPOT.**

**Not Required**

**APPENDIX-68**

**LIST OF FOREST NURSERIES.**

Location	Area	Annual average	No. of seedlings	Remarks

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INFORMATION WILL BE COLLECTED DURING THE PLAN PERIOD

**APPENDIX-69**

**LIST OF KENDU UNITS.**

**Not required**

**APPENDIX-70**

**LIST OF KENDU PHADIES.**

**Not required**

**APPENDIX-71**

**LIST OF VILLAGES WITHIN P.A.**

Sl.No.	Name of the village/Hamlet village	District	Area in Ha.	Population	Year of settlement
1	2	3	4	5	6
1	Takarsinga	Angul	347.65	498	1962
2	Kulangi	-do-	176.85	300	1962
3	Jagannathapur	-do-	688.75	1171	1962
4	Hinsirida	-do-	156.37	269	1962
5	Kumbharabhuin (Hamlet)	-do-	-	-	1962
6	Ramimunda	-do-	517.00	138	1962
7	Pampasar	-do-	172.49	171	1962
8	Jocub	-do-	205.62	74	1962
9	Badakheta	-do-	90.24	100	1962
10	Salor	-do-	123.40	90	1962

11	Purunakote	-do-	358.39	766	1962
12	Chhotkei	-do-	234.61	434	1962
13	Tulka	-do-	225.01	455	1962
14	Majhipada	-do-	383.87	170	1962
15	Beherasahi	-do-	237.87	177	1962
16	Goindi	-do-	82.74	308	1962
17	Karadapada	-do-	150.91	415	1962
18	Hatibari	-do-	281.80	443	1962
19	Tikarpada	-do-	152.07	684	1962
20	Katrang	-do-	397.39	276	1962
21	Gopalpur	-do-	140.66	316	1962
22	Raigoda	-do-	172.43	185	1962
23	Tarava (F.V.)	-do-	126.00	250	1910
24	Asanbahal (F.V.)	-do-	32.00	114	1933
25	Bhurkundi (F.V.)	-do-	111.00	189	1914
26	Doruha	-do-	216.91	101	1962
27	Malisahi	-do-	84.58	201	1962
28	Jamudoli	-do-	242.81	640	1962
29	Kudasinga	-do-	54.63	93	1962
30	Nilamara	-do-	55.04	76	1962
31	Limbadihi	-do-	162.68	488	1962
32	Luhasinga	-do-	359.36	771	1962
33	Dolamundi	-do-	89.44	191	1962
34	Karadasinga	-do-	78.51	267	1962
35	Ragudisahi ( Hamlet)	-do-	-	-	1962
	<b>Total</b>		<b>6909.08</b>		

**CUTTACK DISTRICT.**

1	2	3	4	5	6
36	Baliput	Cuttack	199.36	284	1995
37	Silati (Hamlet)	-do-	-	-	1995

38	Kamaladihi	-do-	220.08	2181	1995
39	Ranibhuin	-do-	189.32	511	1995
40	Panchama	-do-	901.89	713	1995
41	Kaintara	-do-	170.65	215	1995
42	Nuagaon	-do-	406.00	265	1995
43	Paikaregeda	-do-	748.87	418	1995
44	Satyajayapur	-do-	686.47	530	1995
45	Dhanurjayapur	-do-	638.97	412	1995
46	Sampur	-do-	221.42	130	1995
47	Kunjabanapur	-do-	40.70	192	1995
48	Janisahi	-do-	156.74	1149	1995
49	Regeda	-do-	182.26	1512	1995
50	Talasaahi	-do-	138.53	786	1995
51	Chikanakhandi	-do-	139.34	363	1995
52	Sanagaon	-do-	217.16	991	1995
53	Jillinda	-do-	327.00	1159	1995
54	Mahigarh	-do-	100.36	692	1995
55	Mandania	-do-	245.24	560	1995
56	Ambakhola (Hamlet )	-do-	-	-	1995
	<b>Total of Cuttack Dist.</b>		<b>5,830.36</b>	<b>13063</b>	

**MAHANADI WILDLIFE DIVISION, NAYAGARH ,BOUDH DISTRICT.**

57	Ghungurpada	Boudh	141.24	111	1989
58	Hatigarh	-do-	91.68	250	1989
59	Nuapada	-do-	95.54	132	1989
60	Kumari	-do-	755.39	1203	1989
61	Bhapur	-do-	399.65	389	1989
62	Budhamba	-do-	77.88	144	1988
63	Semiguda	-do-	59.03	14	1988
64	Siripaju	-do-	189.55	78	1988

65	Geredisahi	-do-	166.33	279	1989
66	Nandagadu	-do-	152.57	75	1989
67	Satakhanda	-do-	384.82	451	1990
68	Hinjal	-do-	109.74	206	1989
69	Kutibari	-do-	140.84	246	1989
70	Marada	-do-	29.94	57	1989
71	Atalasara	-do-	420.44	281	1990
72	Sitalapani	-do-	294.56	295	1989
73	Sunakhania	-do-	-	-	1988
74	Ghatgaon	-do-	-	-	1988
	<b>Total of Boudh District</b>		<b>3509.20</b>	<b>3,916</b>	

### NAYAGARH DISTRICT

75	Kuturi	Nayagarh	117.36	107	1985
76	Malisahi	-do-	80.55	180	1985
77	Badamul	-do-	323.86	207	1985
78	Bethiasahi	-do-	66.48	247	1985
79	Muduligadia	-do-		97	1985
80	Kandhajilinda	-do-	345.04	57	1985
81	Chhamundia	-do-	412.42	1069	1985
82	Haripur	-do-	156.82	414	1985
83	Kanipokhari	-do-	196.44	105	1985
84	Khalisahi	-do-		161	1985
85	Bantapada	-do-	216.32	391	1985
86	Iswarpur	-do-	202.85	526	1985
87	Maskajholi	-do-	46.39	96	1985
88	Raigadia	-do-	34.08	216	1985

89	Mohanpada	-do-		232	1985
90	Dasipur	-do-		48	1985
91	Rajingi	-do-	69.79	534	1985
92	Dhobabarei	-do-	50.30	170	1985
93	Kumbhirakhani	-do-	117.04	565	1985
94	Salapaganda	-do-	9.31	35	1985
95	Musuguda	-do-	4.45	22	1985
96	Malasapadar	-do-	27.52	24	1985
97	Sagadabhanga	-do-	20.64	25	1985
98	Bahali	-do-	23.47	-	1985
	<b>Total of Nayagarh Dist.</b>		<b>2521.13</b>	<b>5,528</b>	

## APPENDIX-72

### LIST OF VILLAGES OUTSIDE P.A.

Name of the village	District	Division	Area ( in Ha.)	Population	Year of settlement
Barabhaya	Cuttack	Athagarh	199	414	1995
Kusal	Cuttack	Athagarh	92	09	1995
Balikiary	Cuttack	Athagarh	188	291	1995
Chakamunda	Cuttack	Athagarh	314	1269	1995
Sisupathar	Cuttack	Athagarh	398	546	1995
Maradamukha	Cuttack	Athagarh	198	558	1995
Kharuani	Cuttack	Athagarh	26	108	1995
Marudiha	Cuttack	Athagarh	25	72	1995
Nuakheta	Angul	Angul	1045	1417	1962
Balanga	Angul	Angul	227	1149	1962



Talasira	Angul	Angul	186	458	1962
Labangi	Angul	Angul	230	70	1962
Pampasar	Angul	Angul	172	171	1962
Hidsing	Angul	Angul	270	296	1962
Hinsrida	Angul	Angul	156	269	1962
Burti	Angul	Angul	247	366	1962
Jagannathpur	Angul	Angul	689	1171	1962
Tainsi	Angul	Angul	1071	1724	1962
Kamarsahi	Angul	Angul			1962
Kumuri	Angul	Angul	174	412	1962
Tendulipada	Angul	Angul	128	76	1962
Hinjagola	Angul	Angul	207	281	1962
Kulsar	Angul	Angul	155	264	1962
Krushnachakra	Angul	Angul	235	242	1962
Laimunda	Angul	Angul	76	124	1962
Baghmunda	Angul	Angul	417	236	1962
Hinjadoli	Angul	Angul	131	188	1962
Nuapada	Angul	Angul	326	580	1962
Olaberi	Angul	Angul	91	132	1962
Kantabeda	Angul	Angul	390	527	1962
Baragotha	Angul	Angul	281	198	1962
Badataila	Angul	Angul	75	235	1962
Bhagatpur	Angul	Angul	186	557	1962
Dandasinga	Angul	Angul	98	281	1962

Lakshmanpur	Angul	Angul	133	458	1962
Bhalumunda	Angul	Angul	78	127	1962
Ganjada	Angul	Angul	760	1146	1962
Kadaliberini	Angul	Angul	97	401	1962
Kothabhuin	Angul	Angul	565	902	1962
Sankrida	Angul	Angul	204	124	1962
Dalaki	Angul	Angul	155	219	1962
Dalasinga	Angul	Angul	224	583	1962
Thukuli	Angul	Angul	89	0	1962
Hinsaloi	Angul	Angul	70	59	1962
Sorispala	Angul	Angul	68	150	1962
Khalisahi	Nayagarh	Nayagarh	173	138	1985
Khajuridiha	Nayagarh	Nayagarh	89	125	1985
Champadali	Nayagarh	Nayagarh	139	167	1985
Siligadi	Nayagarh	Nayagarh	167	117	1985
Raimara	Nayagarh	Nayagarh	276	285	1985
Tulikutapia	Nayagarh	Nayagarh	83	62	1985
Sakin	Nayagarh	Nayagarh	114	43	1985
Dhipasahi	Nayagarh	Nayagarh	101	185	1985
Kendudhipi	Nayagarh	Nayagarh	42	0	1985
Gergedi	Nayagarh	Nayagarh	59	57	1985
Purunapani	Nayagarh	Nayagarh	59	89	1985
Gochhabari	Nayagarh	Nayagarh	163	244	1985
Dhupaju	Nayagarh	Nayagarh	106	133	1985

Badasilinga	Nayagarh	Nayagarh	328	481	1985
Sikhargochha	Nayagarh	Nayagarh	134	177	1985
Janakjhola	Nayagarh	Nayagarh	22	12	1985
Khalighati	Nayagarh	Nayagarh	348	134	1985
Janisahi	Nayagarh	Nayagarh	69	79	1985
Sansilinga	Nayagarh	Nayagarh	44	8	1985
Dumduma	Nayagarh	Nayagarh			1985
Tailasahi	Nayagarh	Nayagarh			1985
Parhasahi			7929	11038	
<b>Total</b>			<b>7927</b>		

**APPENDIX-73**

**LIST OF PERSONS HOLDING FIREARMS LICENSE WITHIN VILLAGES  
INSIDE P.A.**

INFORMATION WILL BE COLLECTED DURING THE PLAN  
PERIOD

**APPENDIX-74**

**CONSTITUTION OF GRAZING UNITS.**

**Not required.**

**APPENDIX-75**

**DETAILS OF CATTLE KILLING BY WILD CARNIVORES.**

YEAR	CATTLE KILLEDE	ANIMAL	VILLAGE	PAYMENT MADE
2002-03	-	-	-	-
2003-04	-	-	-	-
2004-05	GOAT-7	Leopard	Tulka	Not illegible for

				payment
2005-06	Buffalo	Tiger	Raigoda	2,000/-
	Calf	Leopard	Purunakote	500/-
	Bullock	Leopard	Purunakote	1,500/-
2006-07	-	-	-	-

#### **APPENDIX-76**

#### **LIST OF MAN EATING & OR MAULING CASES BY WILD CARNIVORES**

YEAR	CATTLE KILLEDE	ANIMAL	VILLAGE	PAYMENT MADE
2002-03	-	-	-	-
2003-04	-	-	-	-
2004-05	-	-	-	-
2005-06	-	-	-	-
2006-07	-	-	-	-

#### **APPENDIX-77**

#### **NUMBER OF PEOPLE INJURED BY WILD ANIMALS OTHER THAN CARNIVORES.**

YEAR	People Injured	Human Fatalities	Destruction		Name of the wild Animal	Payment made
			Crop damage	Cattle kill		
2002-03	-	1 (Nuakheta)	-	-	Elephant	10,000/-
			10.75 Ac	-	Elephant	10,750/-
2003-04			0.62 Ac	2 Buffalo	Elephant	4,000/-
2004-05		1 (Bidyadhar)	10.71 Ac	1 Buffalo	Elephant	1,12,710-
2005-06			27.94 Ac	3 Buffalo	Elephant	33,940/-
2006-07	-	-	-	3 Buffalo	Elephant	6.,000/-

#### **APPENDIX-78**

#### **ILLIGAL HUNTING OF WILDLIFE INCLUDING METHOD USED.**

<b>Year</b>	<b>Wild Animal killed</b>	<b>Method of hunting</b>
2002-03	Sambar-2	Gun shut
	Bison-3	Gun shut
	Wild boar-1	Gun shut
	Barking deer-1	Gun shut
2003-04	Elephant-1	Gun shut
	Mouse deer-1	Gun shut
	Spotted deer-1	Gun shut
	Sambar-1	Gun shut
	Chousingha-1	Gun shut
	Barking deer-3	Gun shut
2004-05	Deer-1	Dug bite
	Wild boar-1	Gun shut
2005-06	Spotted deer-5	Gun shut
	Hare-1	Gun shut
	Wild pig-4	Gun shut
	Sambar-1	Gun shut
	Bioson-1	Gun shut
	Barking deer-2	Gun shut
2006-07	Elephant-3	Gun shut
	Sambar-2	Gun shut
	Barking deer-1	Gun shut
	Mouse deer-2	Gun shut
	Wild pig-3	Gun shut

**APPENDIX-79**

**NUMBER OF OFFENCE CASES RELATING TO ILLIGAL TRADE IN  
WILD ANIMALS.**

INFORMATION WILL BE COLLECTED DURING THE PLAN PERIOD

**APPENDIX-80**

**HUNTING RECORD IN RESPECT OF WILDLIFE SPECIES.**

INFORMATION WILL BE COLLECTED DURING THE PLAN PERIOD

**APPENDIX-81**

**HUNTING REPORT OF SPECIES CURRENTLY ALLOWED TO BE  
LEGALLY HUNTED IN THE BUFFER ZONE.**

INFORMATION WILL BE COLLECTED DURING THE PLAN PERIOD

**APPENDIX-82**

**LIST OF MANNED & UNMANNED BARRIERS WITH LOCATIONS.**

INFORMATION WILL BE COLLECTED DURING THE PLAN PERIOD

**APPENDIX-83**

**ANNUAL RECORD OF SPECIES WISE NUMBER OF ANIMALS  
PRESCRIBED LEGALLY FOR DESTRUCTION.**

INFORMATION WILL BE COLLECTED DURING THE PLAN PERIOD

**APPENDIX-84**

**LIST OF ROADS.**

As is in Appendix 20 of Management Plan

**APPENDIX-85**

**LIST OF FIRE LINES.**

INFORMATION WILL BE COLLECTED DURING THE PLAN PERIOD

**APPENDIX-86****LIST OF WIRELESS STATIONS.**

NAME	LOCATION	STATUS	REMARK
SATKOSIA	DIVN.OFFICE	STATIC	
D.F.O.SRES	ANGUL	STATIC	
KRUSHNACHAKRA	PAMPASAR	STATIC	
LABANGI	LABANGI	STATIC	
RAIGODA	RAIGODA	STATIC	
JAGANNATHPUR	JAGANATHPUR	STATIC	
KUMURI	KUMURI	STATIC	
BAGHAMUNDA	BAGHAMUNDA	STATIC	
NANDINI	PURUNAKOTE	STATIC	
BHAGABAN	TULKA	STATIC	
BHURKUNDI	BHURKUNDI	STATIC	
NILAMADHABA	JILLINDA	STATIC	
BALIPUT	BALIPUT	STATIC	
LION	KATRANG	STATIC	
BASANTI	TIKARPADA	STATIC	
MAJHIPADA	MAJHIPADA	STATIC	

**APPENDIX-87****LIST OF WATCH TOWERS.**

Sl.No.	Name of watch tower	Remarks
1	Kantarsinga	
2	Hatigirija	
3	Kandhaida	
4	Kadalikhola	
5	Padmatola	

**APPENDIX-88****LIST OF ANNUAL FIRES BY LOCATION.**

INFORMATION WILL BE COLLECTED DURING THE PLAN PERIOD

**APPENDIX-89****LIST OF VEHICLES – ROAD & WATER TRANSPORT.**

INFORMATION WILL BE COLLECTED DURING THE PLAN PERIOD

**APPENDIX-90**

**LIST OF RANGES, SECTIONS OR CIRCLES & BEATS.**

<b>Satkosia Wildlife Division, Angul</b>		
<b>Range</b>	<b>Section</b>	<b>Beat</b>
1. Purunakote	1. Tulka (N)	1. Tulka (A) 2. Tulka (B) 3. Tulka (C)
	2. Tulka (S)	3. Tulka (D) 4. Tulka (E) 5. Tulka (F)
	3. Purunakote	7. Chhotkei (A) 8. Chhotkei (B) 9. Purunakote (A) 10. Purunakote (B)
	4. Baghamunda	11. Baghamunda (A) 12. Baghamunda (B) 13. Baghamunda (C)
2. Pampasar	5. Pampasar	14. Pampasar (A) 15. Pampasar (B) 16. Jagannathpur (A) 17. Jagannathpur (B)
	6. Labangi	18. Labangi (A) 19. Labangi (B) 20. Labangi (C)
	7. Kumuri	21. Kumuri (A) 22. Kumuri (B)
	8. Tarava	23. Tarava (A) 24. Tarava (B)
3. Jillinda	9. Jodum	25. Baliput 26. Kamaladihi 27. Jillinda 28. Sisoopathar



	10. Katrang	29. Katrang (A) 30. Katrang (B) 31. Katrang (B) 32. Siaribhundi
4. Tikarpada	11. Tikarpada	33. Tikarpada (A) 34. Tikarpada (B)
	12. Majhipada	35. Majhipada (A) 36. Majhipada (B) 37. Naleswar
Raigoda	13. Raigoda (E)	38. Raigoda (A) 39. Raigoda (B) 40. Raigoda (C) 41. Raigoda (D)
	14. Raigoda (W)	42. Raigoda (E) 43. Raigoda (F)
	15. Bhurkundi (W)	44. Bhurkundi (A) 45. Bhurkundi (B)
<b>Mahanadi Wildlife Division, Nayagarh</b>		
<b>Range</b>	<b>Section</b>	<b>Beat</b>
1. Chhamundia	1. Badamul	1. Kuturi 2. Badamul 3. Malisah
	2. Chhamundia	4. Chhamundia 5. Rajingi 6. Muduligadia 7. Khandadhua
	3. Dhipisahi	8. Dhipisahi 9. Gergedi
	4. Purunapani	10. Purunapani 11. Malasapadar

2. Kusanga	5. Kusanga	12. Kusanga 13. Nuapada 14. Kumari
	6. Sitalpani	15. Marada 16. Sukhania 17. Sitalpani 18. Atalasara
	7. Siripaju	19. Padamatola 20. Siripaju 21. Nandagadu 22. Hinjala

**APPENDIX-91**

**LIST OF BUILDINGS WITH LOCATIONS.**

As is in Appendix- 21 of Management Plan.

**APPENDIX-92**

**LIST OF ENCROACHMENTS WITH LOCATION & CURRENT STATUS.**

LOCATION	CURRENT STATUS
NOT REQUIRED.	

**APPENDIX-93**

**LIST OF EQUIPMENTS.**

<b>Sl. No</b>	<b>Name of equipment</b>	<b>Number</b>
1	Binocular	
2	Night Vision binocular	
3	DBBL Gun	
4	315 Sporting Gun	
5	32 Revolver	
6	Fire fighting equipments	
7	Rain gauge	
8	Digital still camera	
9	Digital Video Camera	
10	GPS	

**APPENDIX-94**

**NOTIFICATION OF CHANGE IN FOREST VILLAGE STATUS TO  
REVENUE VILLAGE STATUS.**

NOT REQUIRED.

**APPENDIX-95**

**REGULARISATION OF ENCROACHMENTS.**

NOT REQUIRED.

**APPENDIX-96**

**CASES OF VIOLATION OF FOREST CONSERVATION ACT.**

INFORMATION WILL BE COLLECTED DURING THE PLAN PERIOD

**APPENDIX-97**

**PENDING APPLICATIONS UNDER FOREST CONSERVATION ACT.**

INFORMATION WILL BE COLLECTED DURING THE PLAN PERIOD

**APPENDIX-98**

**SUBSTANTIVE LEGAL STATUS OF THE LAND INCLUDED IN P.A.**

RESERVED FOREST	PROTECCTED FOREST	UNCLASSSED FOREST	REVENUE LAND	PRIVATE OWNERSHIP

INFORMATION WILL BE COLLECTED DURING THE PLAN PERIOD

**APPENDIX-99**

**SITES OF PILGRIMAGE WITHIN THE P.A. & BUFFER**

INFORMATION WILL BE COLLECTED DURING THE PLAN PERIOD

**APPENDIX-100**

**LIST OF DESERTED VILLAGES**

VILLAGE	LOCATION	AREA	COMPARTMENT	REMARK

INFORMATION WILL BE COLLECTED DURING THE PLAN PERIOD

**APPENDIX-101**

**LIST RELOCATED VILLAGES**

Village	Location	Area	Compartment	Survey Nos.	Original site	Relocated site

INFORMATION WILL BE COLLECTED DURING THE PLAN PERIOD

**APPENDIX-102**

**LIST OF SPECIES OF WILD ANIMALS SELECTED FOR THE PURPOSE  
OF WHR**

INFORMATION WILL BE COLLECTED DURING THE PLAN PERIOD

**APPENDIX-103**

**Address of the Wildlife Divisions.**

Sl. No.	Name of the Division	Telephone No.	Fax No.	E-mail ID
1	Divisional Forest Officer, Satkosia Wildlife Division, Angul At/Po- Hakimpada, Dist. Angul, PIN-759143, (Orissa).	06764-236218(O) 06764-236218(O) 9437193175 (M)	06764-236218	dfosatkosiawl @yahoo.co.in
2	Divisional Forest Officer, Mahanadi Wildlife Division, Nayagarh At/Po- College Road, Dist. Nayagarh (Orissa).	06753-253971(O) 06753-252723 (R) 9437106625(M)	06753-253971	Not existing

**APPENDIX-104**

**Government of Orissa  
Forest & Environment Department**

**NOTIFICATION**

Dated, Bhubaneswar, the 31<sup>st</sup> December, 2007.

No.8F(S)- 32/2006/20807 /F&E. In exercise of the powers conferred by Section 38-V of the Wildlife (Protection) Act, 1972 and with prior in principle approval of

National Tiger Conservation Authority, State Government do hereby notify the two contiguous wildlife sanctuaries namely Satkosia Gorge Sanctuary and the Baisipali Sanctuary described in the Schedules A, B1, B2 as the “**Satkosia Tiger Reserve**”, with the area described in Schedules C, D and E as the “**Core Area or Critical Tiger Habitat of Satkosia Tiger Reserve**”.

**SCHEDULE - A:**

**LOCATION OF THE AREA OF THE TIGER RESERVE**

The Satkosia Tiger Reserve is located in the districts of Angul, Cuttack, Nayagarh and Boudh, and the geo-coordinates of the extreme points on the Tiger Reserve boundary lie on 20<sup>0</sup> 23' 40" N and 20<sup>0</sup> 45' 36" N latitudes and 84<sup>0</sup> 32' 35" E and 85<sup>0</sup> 05' 24" E longitudes. The area of the Tiger Reserve is the total area of Satkosia Gorge Sanctuary and Baisipalli Sanctuary, i.e. 963.87 sq. kms inclusive of the Core area or critical Tiger Habitat of 523.61 sq. kms.

**SCHEDULE – B1:**

**DESCRIPTION OF OUTER BOUNDARY OF THE TIGER RESERVE**

The outer boundary of Tiger Reserve starts from junction of river Mahanadi & Orasingha Nalla (Known as Suhagi nala in upper reaches), under PS- Narsinghpur in Cuttack district & follows the Orasingha Nalla in north westerly direction till it meets Tulka RF boundary line. Then the boundary follows the inter district boundary line between Cuttack & Angul district in north easterly direction up to village Bhurkundi & there after runs along the boundary line of Raigoda RF in a anti clock wise direction up to Rasanda. From there it goes along the Raigoda- Pampasar forest road in north westerly direction till it meets Angul – Tikarpada P.W.D. road at Pampasar & follows the P.W.D. road up to Jagannathpur till it meets the Tainsi RF boundary line. After that the boundary follows in north westerly direction and then south-westerly direction along Tainsi RF boundary till it meets Baghamunda RF

boundary line at Baghamunda & then follows the RF boundary line in anti clock wise direction till it meets Chanagodi Nalla of Majhipada RF. Then it follows the Chanagodi Nalla along the downstream till it meets Athamallik- Doruha road & follows the road westerly till it meets Kusumkuhuri Nalla of Athamallik sub-division. There after the boundary follows the Kusumkuhuri Nalla along the downstream southward, till it meets the river Mahanadi, where it crosses the river Mahanadi as well as the inter district boundary between Angul & Boudh district in a southerly direction & meets the junction point of Badajora Nalla & river Mahanadi in Harbhanga PS of Boudh district. Then it follows Badajora Nalla in southward direction till it meets the Hatidhara RF boundary line & then follows the same in a north easterly direction ad touches the inter-district oundary line of Boudh and Nayagarh districts; then follows along the southern boundary of Mahanadi RF of Nayagarh district till it touches the boundary of Baisipalli RF. Then the boundary of the Tiger Reserve follows the boundary of Baisipalli RF touching Doisinga village, Ragum Parbat, Sulia Parbat, Mundali Parbat, Ambadhari Parbat, Patadei Parbat, and villages of Banigochha, Durgaprasad, Makarprasad, Shikhargochha, Badasilinga, Gochhabari and Dhipisahi to proceed upto Khalkhala nalla on the boundary of Mahanadi RF. Then the boundary of the Tiger Reserve follows the southern boundary of Mahanadi RF in an easterly direction till it meets Brutanga Nalla. The boundary thereafter runs along Brutanga Nalla in a northerly direction till it meets the river Mahanadi. Then it crosses the river Mahanadi as well as the inter district boundary between Nayagarh & Cuttack district in a north westerly direction to meet the junction point of Orasingha Nalla with river Mahanadi. (The starting point).

**SCHEDULE - B2**  
**(DESCRIPTION OF THE OUTER BOUNDARY OF THE  
TIGER RESERVE DISTRICT-WISE AND DIVISION-WISE)**

I. SATKOSIA WILDLIFE DIVISION.

1. Angul District (Area: 453.25 sq.kms.)

(i) Angul Sub-Division:-

The boundary line in the South-East follows the inter district Boundary line between Angul and Cuttack Districts upto village Bhurkundi and then runs along the boundary line of Raigoda R. F. up to village Rasanda and then along the Raigoda-Pampasar forest road till it meets Angul-Tikarpada P.W.D.Road and follows the same up to Jagannathpur till it meets the Tainsi R.F.boundary line and follows the same in a north –westerly direction till it meets Baghmunda R.F. boundary line and then follows the same in the North westerly direction till it meets Chanagodi nala and follows the same till it meets the Majhipada R.F. boundary line and follows the same till it meets the River Mahanadi and follows the inter district boundary between Angul and Boudh district and Angul and Nayagarh districts till it meets the trijunction point of Cuttack , Angul and Nayagarh districts.

(ii) Athamallik Sub-Division:-

It starts from the junction of River Mahanadi and Kusumkuhuri Nala (Athmallik P.S.) and follows the Nala till it meets the Athamallik - Daruha Road and follows the road till it meets the Chanagodi Nala and follows the Nala in a north-easterly direction till it meets Majhipara R.F. boundary line of Angul Sub-Division and follows the same till it meets the River Mahanadi and follows the River along the inter-district boundary of Angul and Boudh Districts



2. Cuttack District (Area: 76.76 sq.kms.)

(i) Athagarh Sub-Division: -

It starts from the junction of the River Mahanadi and Orasinga Nala (known as Suagi nala in the upper reaches) under P.S. Narsinghpur in the Athagarh Sub-Division and follows the said nala till it meets the Tulka R.F. boundary line, and then follows the inter district boundary line between Cuttack and Angul districts in the westerly direction till it meets the River Mahanadi and follows the inter district boundary between Cuttack and Nayagarh districts.

## II. MAHANADI WILDLIFE DIVISION

(i) Boudh District (Area: 117.84 sq.kms.)

The boundary starts from the junction of river Mahanadi and Badajora Nala in Harbhanga P.S. of Boudh Sub-division and runs along the Nala till it meets the Hatidhara R.F. boundary line and follows the same in a North- Easterly direction till it meets the inter district boundary line of Boudh and Nayagarh districts and follows the same till it meets the river Mahanadi and follows the river in the downstream along the inter district boundary line of Boudh and Nayagarh districts.

(i) Nayagarh District (Area: 316.02 sq.kms.)

(a) Area within Satkoshia Gorge Sanctuary (Area: 147.67 sq.kms.)

It starts from the junction of River Mahanadi and Burtanga Nala in the Gania P.S. of Nayagarh and follows the Burtanga nala in the upstream in a South-Westerly direction till it meets the boundary line of Mahanadi R.F. Then it follows the boundary line of Mahanadi RF first in a westerly direction, then in a northerly direction and again in a westerly direction till it meets the inter district boundary of Boudh and Nayagarh Districts and follows the same in the North-Easterly direction till it meets the river Mahanadi and follows the inter district boundary between Angul, Nayagarh and then Cuttack and Nayagarh districts.

(a) Entire area of Baisipalli Sanctuary (Area: 168.35 sq.kms.)

The area of Baisipalli sanctuary which is entirely within Nayagarh District, starts in its north-west corner from a point at a distance of about 1km south of the inter-district boundary of Nayagarh and Boudh district which is also the trijunction point of Padmatola RF, Mahanadi RF and Baisipalli RF. Then the boundary of the Tiger Reserve within Nayagarh district follows the boundary of Baisipalli RF in an anticlockwise manner touching Doisinga village, Ragum Parbat, Sulia Parbat, Mundali Parbat, Ambadhari Parbat, Patadei Parbat, and villages of Banigochha, Durgaprasad, Makarprasad, Shikhargochha, Badasilinga, Gochhabari and Dhipisahi to proceed upto Khalkhala nalla on the boundary of Mahanadi RF. Then the boundary follows the boundary of Mahanadi RF in a westerly direction till it meets the trijunction point of Padmatola RF, Mahanadi RF and Baisipalli RF.

**SCHEDULE-C**  
**DESCRIPTION OF BOUNDARY OF THE**  
**CORE AREA /CRITICAL TIGER HABITAT OF THE TIGER RESERVE**

The boundary line of core zone starts from tri junction of Siloti -Baliput revenue village, Jorum R.F. Block II and River Mahanadi and runs East ward along the southern, Eastern and Northern boundary of Jorum R.F. Block II till it meets Katrang R.F. boundary. Then it goes along the common boundary of Compt.No.9 & 10 of Katrang R.F. till it meets the boundary of Katrang revenue village. Then it follows the Southern, Western and Northern boundary of Katrang revenue village excluding the village. It follows the common boundary between Compt.No.8 & 9 of Katrang R.F., then it turns North-Easterly along the Eastern boundary of Katrang R.F., Southern boundary of Tulka R.F. till it meets the Compt. No.,11 of Tulka R.F. Then it follows the common boundary between Compt. 10 & 11 of Tulka R.F., Western & Northern boundary of Tulka revenue village excluding the same,

common boundary between Compt.No.4 & 12 of Tulka R.F. till it meets Raigoda R.F. Then it follows the forest road from Tulka to Bhurkundi and Northern, Eastern boundary of Bhurkundi Forest Village and then runs along the Southern & then Eastern boundary of Raigoda R.F. Then follows the Northern boundary of Raigoda R.F., Balanga R.F. (Compt.No.11 & 12), Jocub R.F., Takarsinga R.F. Compt.No.2 excluding the revenue villages like Labangi, Jocub, Talasira & Pampasar. Then it turns South ward along the common boundary of Compt.No.1 & 2 of Takarsinga R.F., Northern boundary of Compt. No 4 & 3 of Takarsinga R.F., and Western boundary of Compt.No.3 & 2 of Purunakote R.F. Then it runs East ward along the common boundary between Compt.No.2 & 4, No.18 & 5, No. 17 & 5 of Purunakote R.F. Eastern & Southern boundary of Chhotkei revenue village excluding the same. Then it runs along the common boundary between Compt.No.7 & 13, 7 & 8, 8 & 9, 10 & 11 of Purunakote R.F. Then it turns Westward and runs along the Northern & western boundary of Tikarpada R.F. till it meets River Mahanadi and then it turns North-Westerly along the Northern bank of River Mahanadi including the bank till it meets Majhipada R.F. and runs along the South Eastern boundary of Majhipada R.F., Southern, Eastern, Northern and Western boundary of Kuru R.F. till it meets Baghmunda Compartment-12. Then it follows the Northern and Western boundary of Baghamunda R.F., then it turns South wards and runs along the Western boundaries of Majhipada R.F., and Compt. No.23, 27, 26 of Hatidhara R.F. Then follows Southern boundary of Compt.No.26, 24 & 25 of Hatidhara R.F. till it meets Doruha-Tikarpada forest road close to river Mahanadi where it crosses the Mahanadi River and touches the Northern boundary of Padmatola R.F. at Compartment 10. Then it follows the boundary of Padmatola R.F. along compartments P-10, P11, P4, P3, P2 and P1 till it meets the boundary of Mahanadi R.F. Then it proceeds south westerly along the Western boundary of Compt.No.1 of Mahanadi R.F., then the Southern boundary of Mahanadi R.F. till it meets

Sagadabhanga revenue village. Then it follows the Northern boundary of Sagadabhanga and Malasapadar revenue village, Eastern & Southern boundary of Malasapadar revenue village, Southern boundary of Sagadabhanga revenue village till it meets Mahanadi R.F. boundary excluding both the revenue villages. Then it runs along the Southern, Eastern & Northern boundary of Mahanadi R.F. till it meets river Mahanadi near Malisahi where it crosses the river and meets the tri junction point between Jorum R.F. block No. II, Mahanadi river bank and Siloti - Baliput revenue village, where it started.

**SCHEDULE-D**  
**FOREST BLOCKS AND COMPARTMENTS INCLUDED IN THE CORE AREA/ CRITICAL TIGER HABITAT OF THE TIGER RESERVE**

Name of the forest block included in the core area	Compartment Nos., included in the core area	Area of the compartments included in the core area (ha)
Tikarpada	1 to 9	2760.45
Purunakote(Part)	2,3,8,11 to 20	4915.50
Tulka(Part)	1 to 10	3275.612
Balanga(Part)	11 & 12	675.98
Jocub	1 to 6	1514.79
Takarsinga(Part)	2,3 and 4	1559.352
Raigoda(Part)	1 to 15 & 16(Part)	4056.65
Katrang(Part)	1 to 8, 10 & 11	4088.157
Jorum(Part)	Block II	886.06
Majhipada	1 to 17	4890.80
Baghamunda	1 to 13	3812.67
Kuru	1 to 9	2116.98

Hatidhara(Part)	23 to 27	1397.98
Padmatola	1 to 11	4674.00
Mahanadi	1 to 17	10283.70
Mahanadi River (Part)		1037.05
Total area		51945.731 hectares

**SCHEDULE - E**  
**SCHEDULE OF THE REVENUE VILLAGES**  
**PRESENTLY SITUATED IN THE CORE AREA.**

Name of the village	District	Area of the village (as per revenue records) (ha)
Raigoda	Angul	172.00
Marada	Boudh	64.66
Kuturi	Nayagarh	119.00
Salapaganda	Nayagarh	27.82
Musuguda	Nayagarh	33.26
Total area of villages in the core area		416.74

BY ORDER OF GOVERNOR

H.S.CHAHAR  
PRINCIPAL SECRETARY TO GOVERNMENT.

Memo No.210808/F&E ,Dated- 31.12.2007

Copy forwarded to Director, Printing, Stationary and Publication, Orissa, Cuttack with a request to publish the Notification in the next issue of the Orissa Gazette.

500(Five hundred) copies of the Gazette Notification may please be sent to this Department for reference & Use.

Sd/-31.12.07  
Additional Secretary to Government.

Memo No.210808/F&E ,Dated- 31.12.2007

Copy forwarded to Private Secretary to Chief Secretary/All Departments of Government / All Heads of Department / Collector, Angul / Collector, Boudh / Collector, Cuttack

/ Collector Nayagarh / D.F.O. Satkosia Wildlife Division / D.F.O. Mahanadi Wildlife Division / D.F.O., Athagarh / D.F.O. Athamallik / D.F.O. Angul / D.F.O. Boudh / D.F.O. Nayagarh / C.F. Angul Circle / C.F. Berhampur Circle / C.F. Bhubaneswar Circle / C.F. Development Circle for favour of information.

Sd/-31.12.07  
Additional Secretary to Government.

## APPENDIX- 105

### **Minutes of the meeting of the Expert Committee for Satkosia-Baisipali Tiger Reserve held on 12.11.2007.**

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The 'Expert Committee for Satkosia-Baisipali Tiger Reserve' met in the office of the Chief Wildlife Warden, Orissa on 12.11.2007 at 11.30 AM to discuss on the said Tiger Reserve proposal and delineation of its core zone, in terms of the provisions of Chapter-IV-B of the Wildlife (Protection) Act 1972. The names of the members who participated in the deliberations are as follows:

1. Sri S.C.Mohanty, Chair.  
Principal CCF (Wildlife) &  
Chief Wildlife Warden, Orissa.
2. Sri S.K.Patnaik, IFS (Retd), Ex-CWLW, Orissa.
3. Dr S.N.Patra, Retd. Professor of Botany and  
acting President of the 'Orissa Environmental Society'.
4. Sri Anup Kumar Nayak, Professor,  
Wildlife Institute of India, Dehradun

(Although Sri Nayak could not make it to the meeting in time, he has been fully apprised of the discussions held in the meeting when subsequently he arrived a little later at the office of the CWLW).

5. Sri B.K.Swain, Conservator of Forests  
(Ex-Silviculturist, Orissa)

The Expert Committee did interaction during the meeting with the Conservator of Forests, Angul Circle; Sri S.S.Srivastava, Chief Conservator of Forests (Wildlife); and Dr L.A.K. Singh, Senior Research Officer in the office of the Principal CCF (Wildlife). The DFO, Satkosia WL Division and the DFO, Mahanadi WL Division, the two DFOs having jurisdiction over the proposed Tiger Reserve area, were also present during the meeting.

The relevant facts which emerged in course of the deliberations of the Expert Committee are as follows:

(1) (a) The State Government vide their letter No.8547/F&E dated 22.5.2002 had furnished a proposal to Government of India for setting up of Satkosia-Baisipali Tiger Reserve with area of 1038.30sq.kms The proposed Tiger Reserve comprised of two contiguous sanctuaries, namely Satkosia gorge sanctuary and Baisipali sanctuary; the Hatidhara RF of Boudh Forest Division and Makarprasad RF of Nayagarh Forest Division.

(b) Government of India have accorded in-principle approval of the competent authority for inclusion of Satkosia sanctuary under Project Tiger vide letter No.3-1/2003-Pt dated 5.8.2006 of the IGF and Director, Project Tiger.

(2) The forests surrounding the Satkosia gorge of Mahanadi river including the stretch of river flowing through the gorge, were notified as Satkosia Gorge sanctuary in May, 1976. The contiguous area to the south of this sanctuary in Nayagarh District was notified as the Baisipali sanctuary in the year 1981. The wild fauna of these sanctuaries comprise of Tigers and Leopards, Elephants, Gaur, Sloth Bear, Sambar, Spotted Deer, Barking Deer, Mouse Deer, Pangolin, Giant Squirrel, Malabar Pied Hornbill, Gharial and Mugger crocodiles, fresh water turtles, freshwater rays, etc.

The tiger and leopard population in these two sanctuaries have been recorded as follows:

<u>Year</u>		<u>No. of tigers</u>		<u>No. of leopards</u>
2000	...	12	...	10
2002	...	11	...	19
2004	...	18	...	34

(3) The landscape surrounding the two sanctuaries has extensive forest areas, particularly on the north-west, south-west and north-eastern sides. These surrounding forest areas are equally good habitats for wild animals, including tigers.

(4) The two RF blocks, namely Hatidhara RF (63.89 sq. kms) in Boudh District and Makarprasad RF (10.54sq.kms) in Nayagarh District, are outside, but adjacent to the boundaries of the two sanctuaries. These two Reserve Forest Blocks were included in the original proposal for the proposed Tiger Reserve submitted to MOEF, Govt. of India; as their inclusion gave a compact shape to the Tiger Reserve. On these two forest blocks, however, there is heavy incidence of people's usage and pressures of multiple use of forestry resources, notably intensive collection of kenduleaf. Within the sanctuary area, however, there is no multiple use forestry. A PWD road also



cuts through Makarprasad RF. For these reasons, it would be advisable to exclude the area outside the two sanctuaries from the proposed Tiger Reserve. By exclusion of the said two forest blocks, the compactness of the proposed Tiger Reserve would diminish marginally in the southern flank, but in the context of the ground realities, such modification is both desirable and reasonable.

(5) The sign survey of carnivores which was carried out during dt.18.1.2006 to dt.20.1.2006 as part of the exercise for estimation of tigers, co-predators, etc. has yielded the following result in respect of the forest beats comprising the two sanctuaries.

Sl. No.	Name of the Beat	No. of tiger and leopard signs during 3 days of monitoring	Number of villages in the Beat
1	Tuluka - A	6	1
2	Tuluka - B	3	0
3	Tuluka - C	2	0
4	Tuluka - D	1	0
5	Tuluka - E	2	0
6	Tuluka - F	2	0
7	Chhotkei - A	4	0
8	Chhotkei - B	3	1
9	Purunakote - A	4	2
10	Purunakote - B	5	2
11	Baghamunda - A	1	0
12	Baghamunda - B	2	0
13	Baghamunda - C	1	0
14	Pampasar - A	3	2
15	Pampasar - B	3	2
16	Jagannathpur - A	2	1
17	Jagannathpur - B	2	1
18	Labangi - A	3	0
19	Labangi - B	2	0
20	Labangi - C	2	1
21	Kumuri - A	1	0
22	Kumuri - B	2	0
23	Tarava - A	0	2
24	Tarava - B	1	0
25	Baliput	0	1
26	Kamaladiha	0	11
27	Jillinda	1	9
28	Sisupathar	1	0
29	Katrang -A	1	1
30	Katrang -B	2	0
31	Katrang - C	2	0

32	Siaribhundi	5	0
33	Tikarpada - A 33	4	1
34	Tikarpada - B 34	4	3
35	Majhipada - A 35	2	3
36	Majhipada - B 36	2	0
37	Naleswar	0	0
38	Raigoda - A	2	1
39	Raigoda – B	2	0
40	Raigoda – C	2	0
41	Raigoda – D	4	0
42	Raigoda – E	2	0
43	Raigoda – F	4	0
44	Bhurkundi – A	2	1
45	Bhurkundi – B	5	0
46	Chhamundia	0	7
47	Geregedi	1	0
48	Kuturi	2	1
49	Dhipisahi	2	0
50	Malasapadar	5	1
51	Purunapani	2	2
52	Khandadhua	1	1
53	Malisahi	3	2
54	Badmul	1	1
55	Muduligadia	2	2
56	Rajingi	1	7
57	Atalasar	2	1
58	Sitalapani	1	1
59	Marada	3	1
60	Sunakhania	5	0
61	Kumari	3	2
62	Nuapada	4	3
63	Kusanga	4	3
64	Nandagadu	3	1
65	Hinjala	4	4
66	Siripaju	2	2
67	Padmatola	6	0
	Nilamara	0	10
1	Takara	1	1
2	Makarprasad	2	1
3	Dusingi	7	1
4	Badasilinga	0	3

5	Buriapaju	1	4
6	Dhipisahi	4	3
7	Senaperi	4	1
8	Banigochha	5	1
9	Buguda	16	0
10	Damaghati	8	3
11	Jamusahi	3	0
12	Salabhanga	1	0
13	Turangi	12	0
14	Durgaprasad	3	0
	<b>TOTAL</b>	<b>228</b>	<b>111</b>

The result of sign-survey of tigers and leopards in respect of the forest beats just outside the boundaries of the two sanctuaries is as follows.

Sl. No.	Name of the Beat	No. of tiger and leopard signs during 3 days of monitoring
1	Labangi-I	2
2	Labangi-II	2
3	Pampasar	0
4	Balanga	1
5	Kanja	2
6	Karabira	1
7	Nuakheta I	2
8	Nuakheta II	2
9	Saruali	2
10	Hinsrida I	0
11	Hinsrida II	0
12	Manikjodi	0
13	Kantamegha-II	0
14	Balikiari	0
15	Barsinga	0

16	Nuagarh	2
17	Brahmani	0
18	Chakrapada	0
19	Khola	0
20	Kharuani	0
21	Sardhapur	0
22	Rathipur	2
23	Bipradihi	2
24	Koraba	2
25	Maimura	0
26	Dankarisahi	0
27	Kusanga	0
28	Kankanmendhi	0
29	Banigochha	0
30	Baijhari	0
31	Takara	0
32	Ghurudipada	1
33	Gandapaju	1
34	Satakhanda	0
35	Ranisahi	0
	<b>TOTAL</b>	<b>24</b>

(6) Tiger Reserve would include the core or critical tiger habitat and buffer zone. Inclusion of any area in the buffer zone of Tiger Reserve would require consultation with the concerned Gram Sabha. However, 'Tiger Reserve' does not introduce any extra control, regulation or restriction on the people over and above what is already there in respect of any sanctuary. Therefore, in respect of villages which are already within the sanctuary, it would make no difference for the inhabitants to be included within the Tiger Reserve. However, for villages which are outside the sanctuary, any proposal to include them in the buffer zone of Tiger Reserve may not be acceptable to the villagers in the present day situation. A pragmatic approach would be to delineate the boundary of the Tiger Reserve to be co-terminus with the boundary of both the sanctuaries. The Tiger Reserve would thus have an area of 963.87sq.kms.

(7) There are 116 number of villages within the two sanctuaries, i.e. within the proposed Tiger Reserve. All these villages are surveyed and settled villages. The total area of these villages as per revenue records is 285.64sq.kms Most of these villages (93 in number) are, however, located in 3 clusters within the Satkosia gorge sanctuary. There are 18 villages within the Baisipali sanctuary. The three village clusters in Satkosia gorge sanctuary and the entire Baisipali sanctuary area, together comprising of 111 number of villages may be designated as the buffer zone of the Tiger Reserve. The peripheral area extending from the north-eastern, north-western and south-western face of the proposed Tiger Reserve are suitable habitats for tiger and its prey species, and these areas have the potential to be designated as additional buffer. These areas comprising of the following forest blocks may therefore be covered under the 'Tiger Conservation Plan' for the proposed Satkosia Tiger Reserve, although not formally included in the buffer zone of the Reserve.

(a) Cuttack District: (i) Balikiary RF, (ii) Nuagarh RF; (b) Angul District: (iii) Nuakheta RF, (iv) Bolong RF, (v) Krishnachakra RF, (vi) Hatidhara RF; (vii) Taleipathar RF (c) Boudh district: (viii) Arakhpadar RF, (ix) Hatidhara RF; and (d) Nayagarh district: (x) Bankamunda RF, (xi) Makaraprasad RF. Some of these blocks can also be considered for constitution as a Conservation Reserve.

(8) The core zone/ critical habitat/ inviolate area of the Tiger Reserve may include the compartments given in the Annexure. Its boundary is described in the Annexure and it is shown in the annexed map. The core zone as proposed is a compact area of 523.61sq.kms within which there are presently 5 number of villages. The total area of these villages is 4.17sq.kms only. The total population of these villages is estimated to be around 200 persons. The management efforts obviously will be towards making the core zone fully inviolate by formally settling the rights of these villagers and providing them appropriate and attractive resettlement package outside the Tiger Reserve.

(9) Under the norms laid down by the NTCA the core zone should comprise of an area 800 to 1200sq.kms so as to provide adequate habitat for 20 breeding female tigers. The proposed Tiger Reserve as per the latest tiger census of 2004 has already 8 number of female tigers. Therefore, the relatively smaller area of the Tiger Reserve and its core zone may not be inappropriate at present.

The members of the Expert Committee critically analysed the above factual information and fully agreed to the proposed boundaries of the Satkoshia-Baisipalli Tiger Reserve and its core zone, which comprise of 963.87sq.km and 523.61sq.km, respectively.

(Sri S. K. Pattnaik)

(S. C. Mohanty)

Principal CCF (Wildlife) &

Chief Wildlife Warden, Orissa.

(Sri Anup Kumar Nayak)

Co-opted Members:

(Dr S. N. Patra)

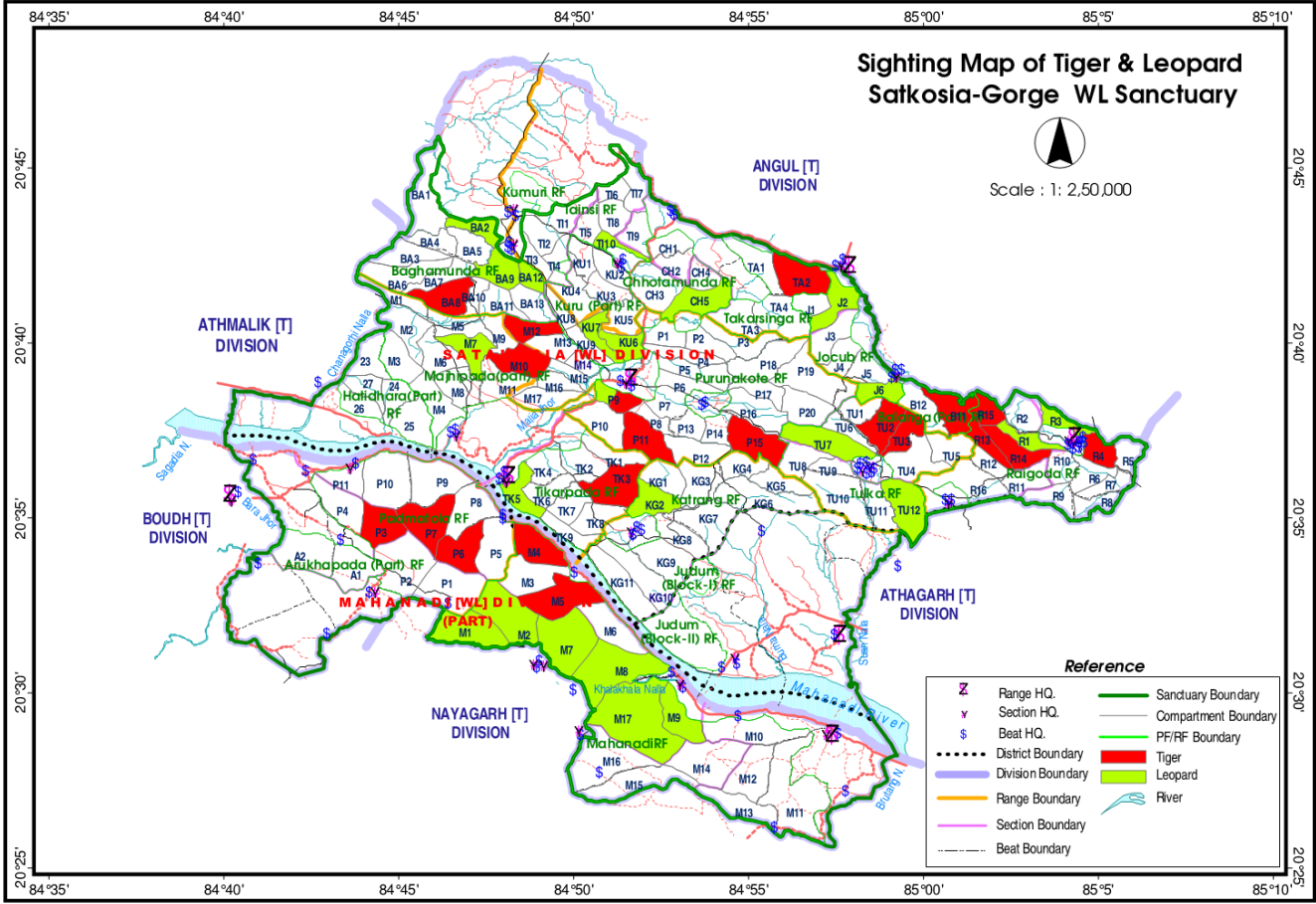
(S. K. Popli)

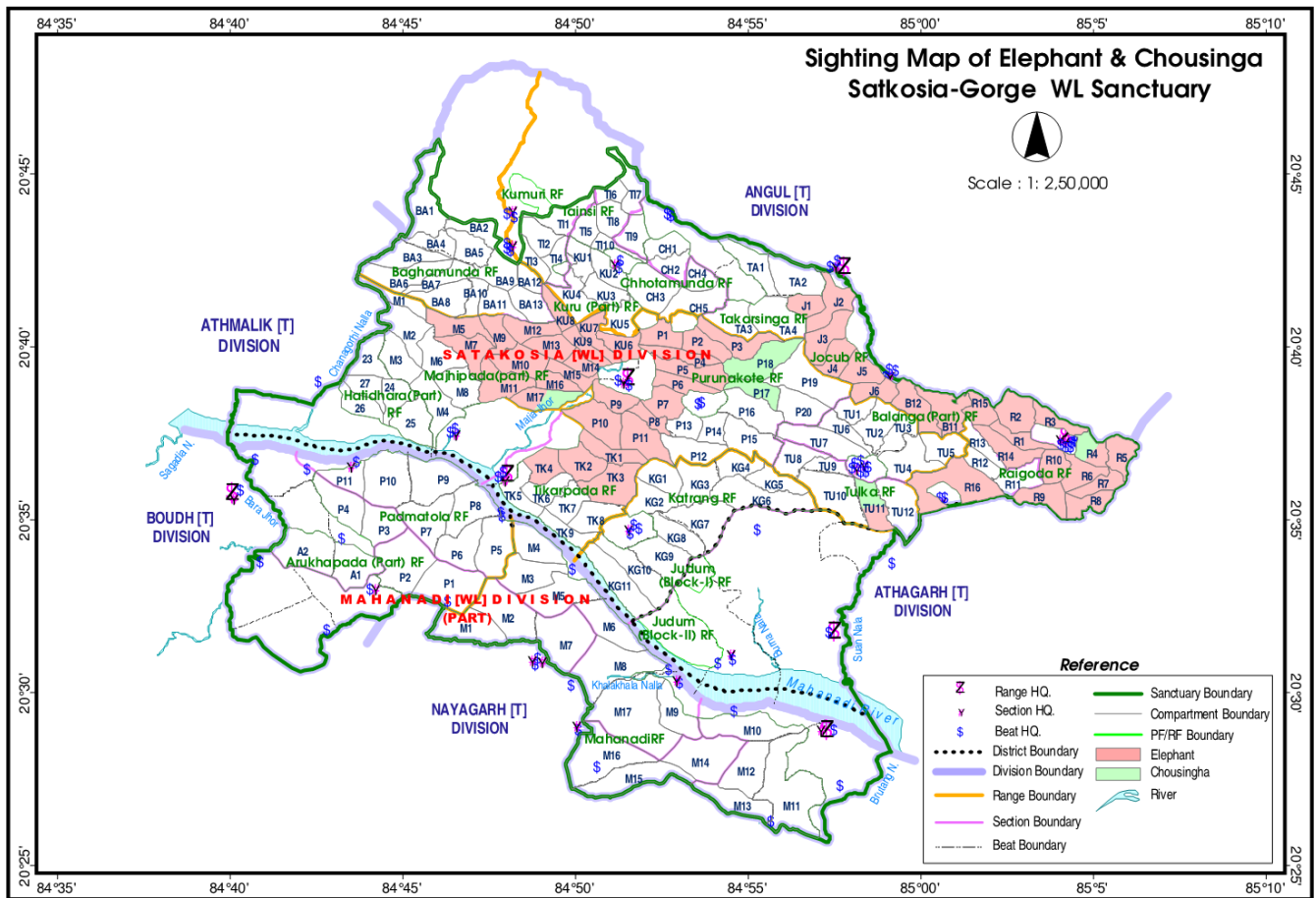
Conservator of Forests, Angul

(Sri B. K. Swain)

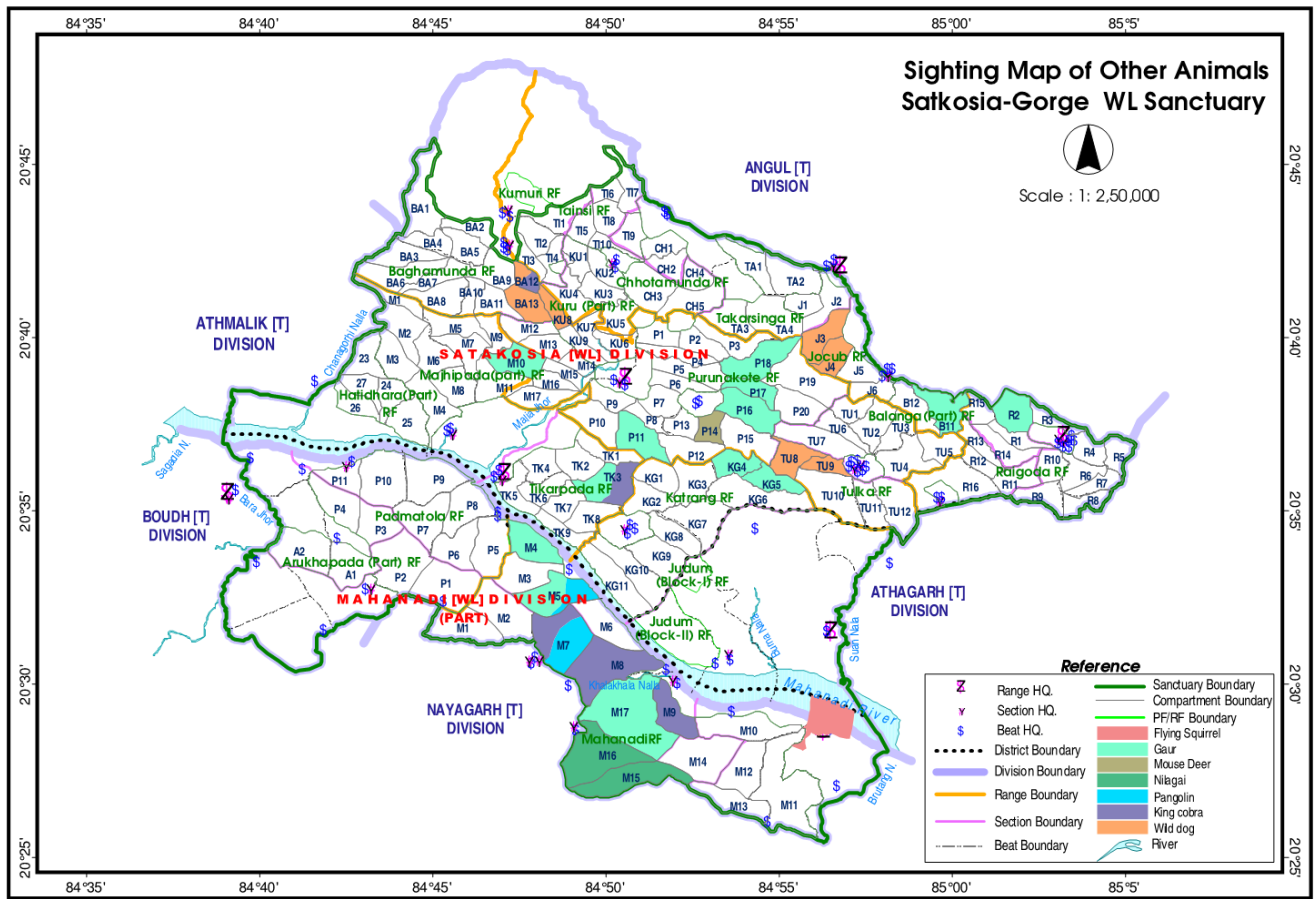
(S. S. Srivastava)

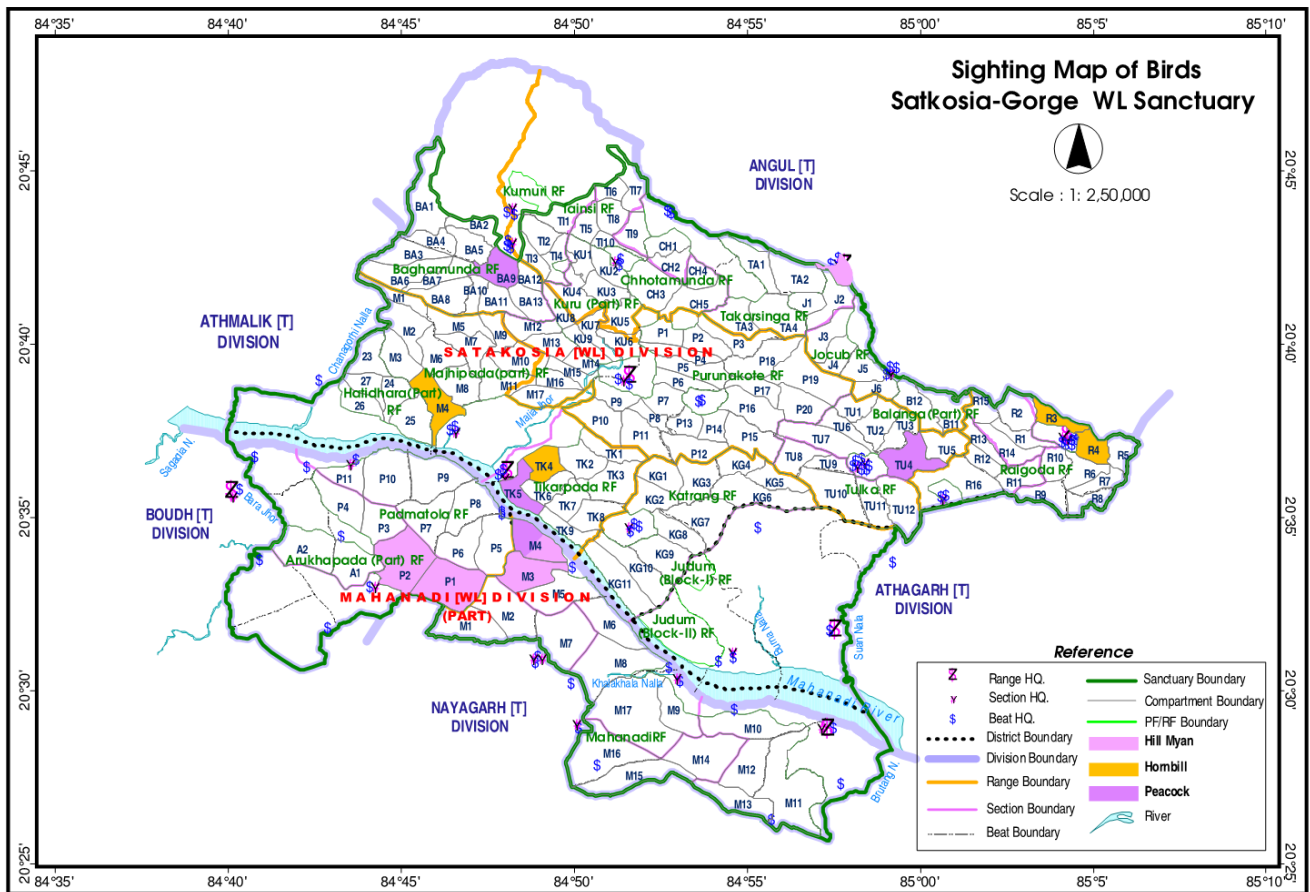
Chief Conservator of Forests (Wildlife

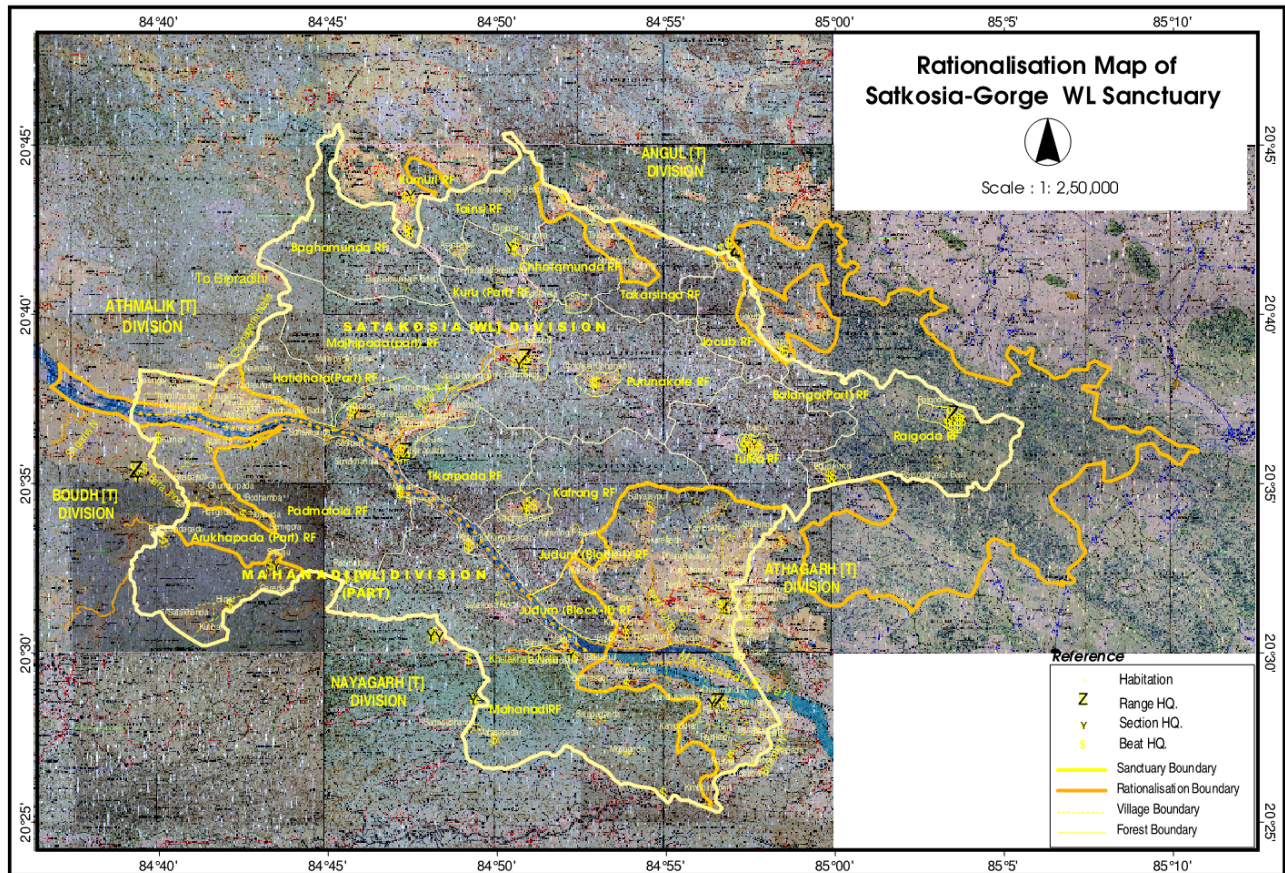


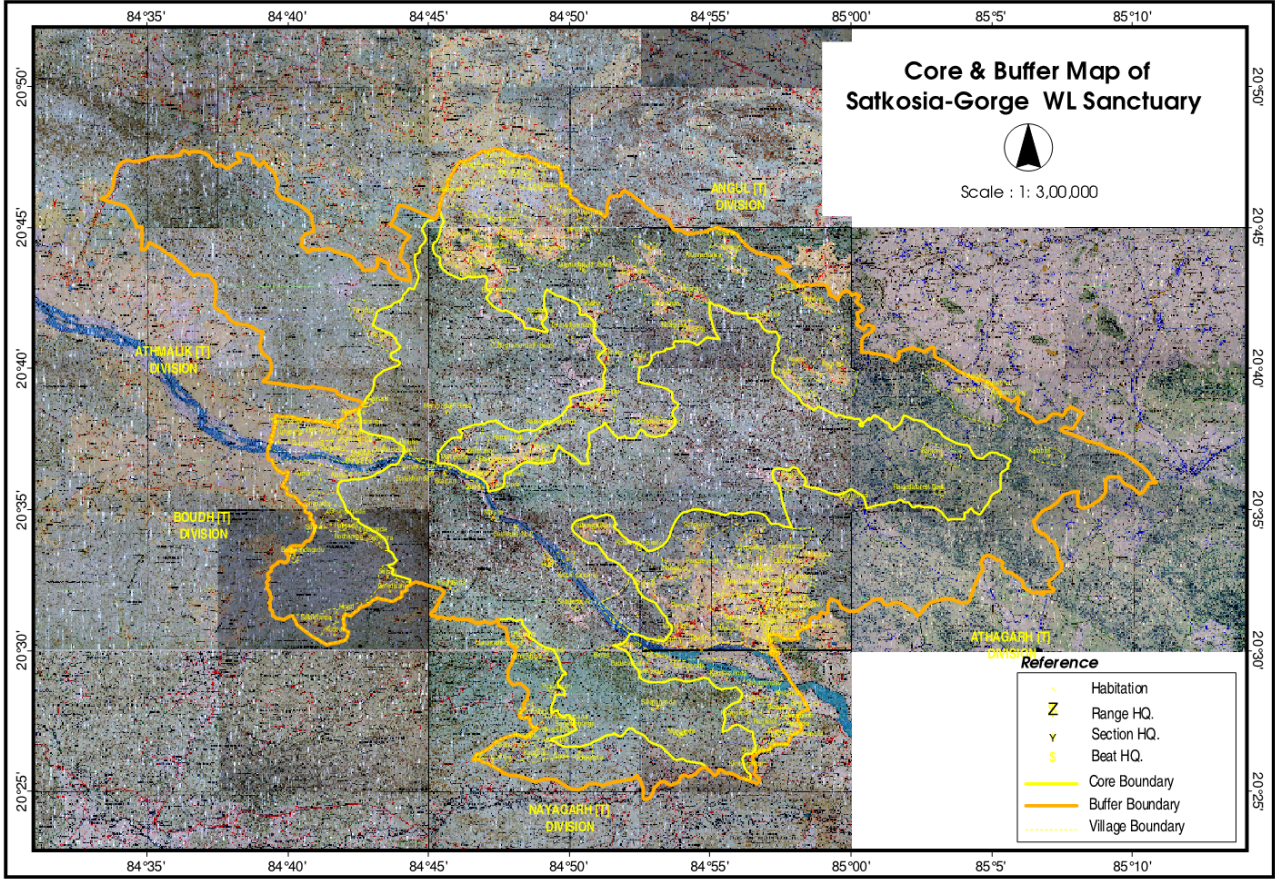








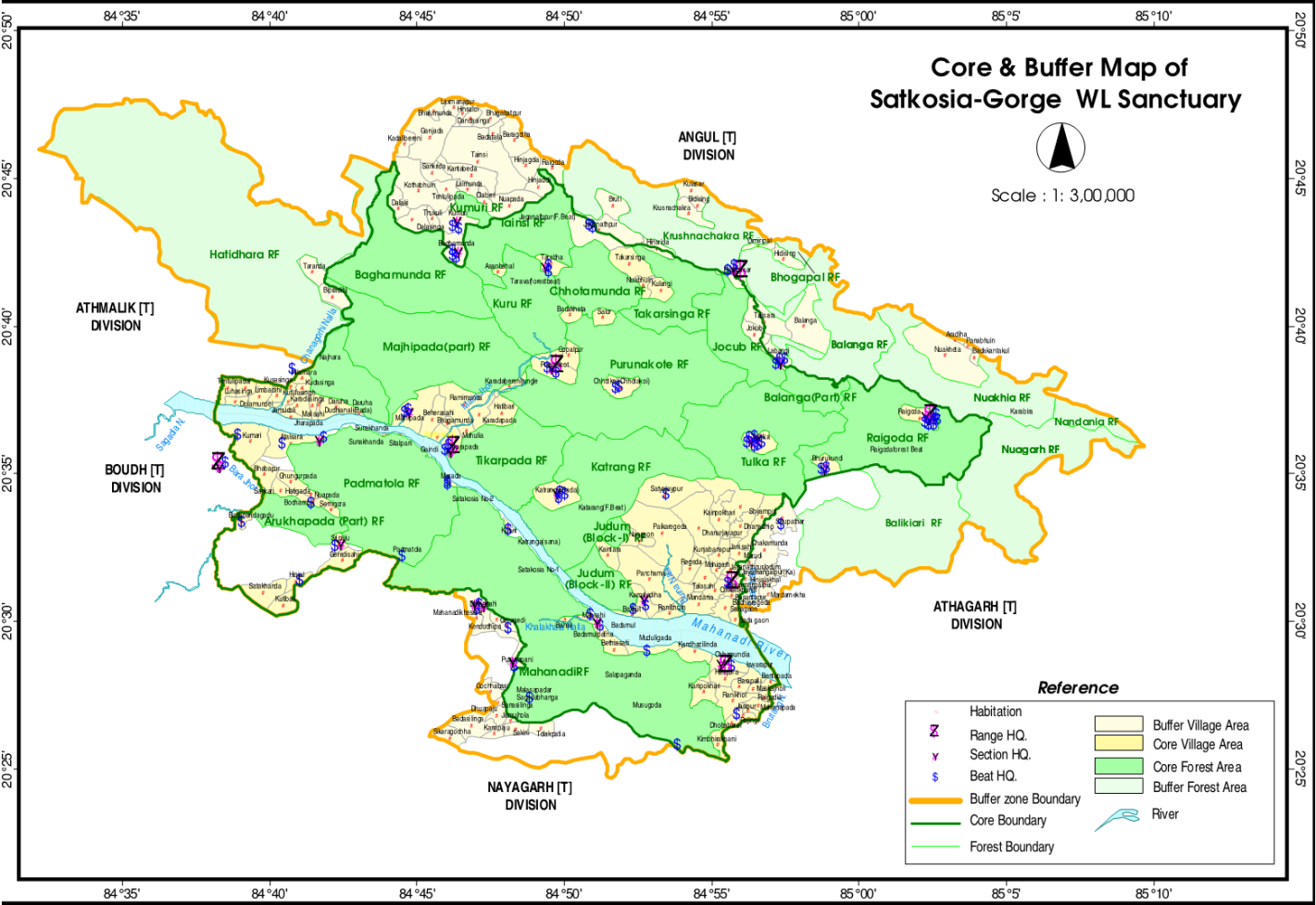




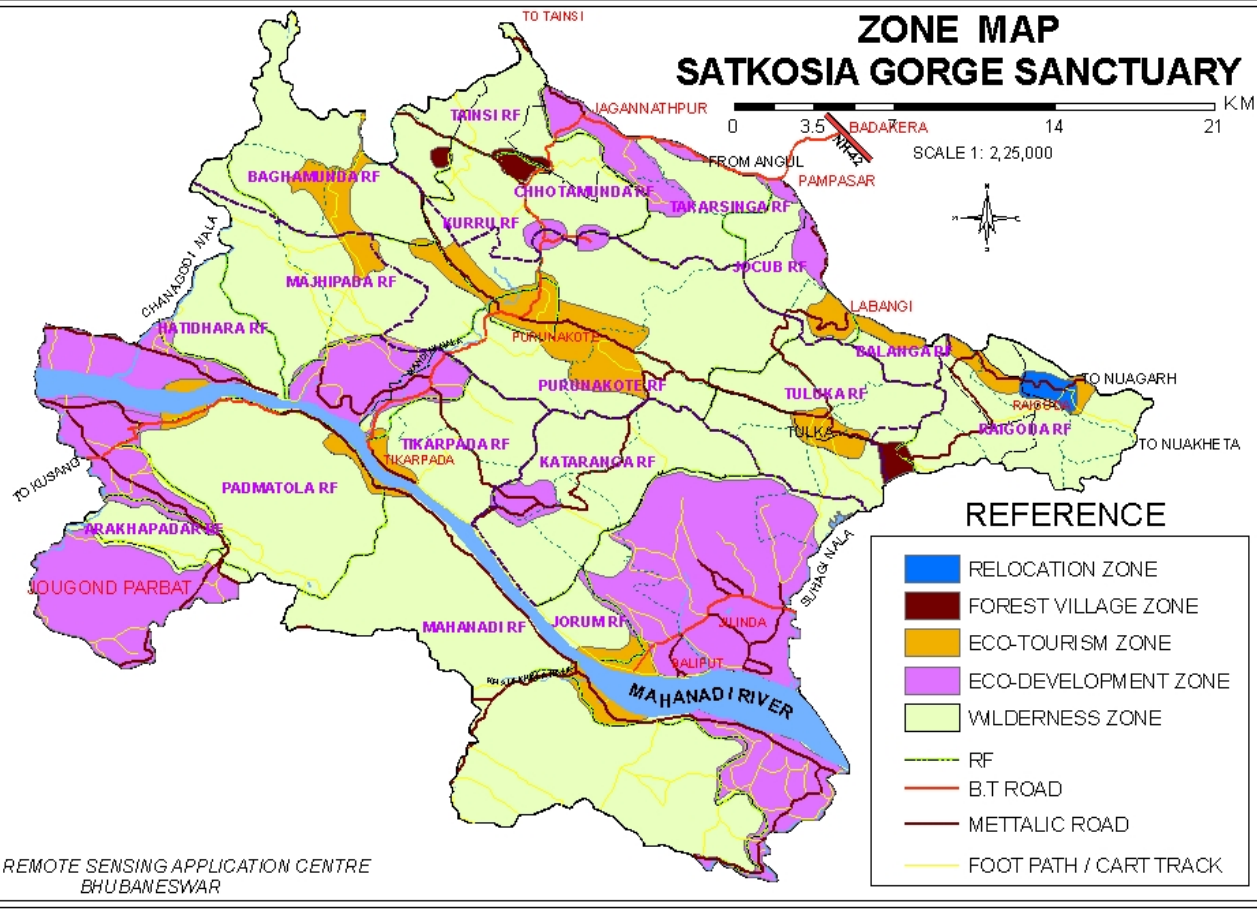
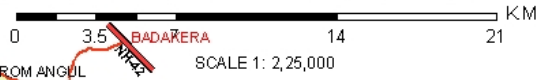
# Core & Buffer Map of Satkosia-Gorge WL Sanctuary



Scale : 1 : 3,00,000



# ZONE MAP SATKOSIA GORGE SANCTUARY

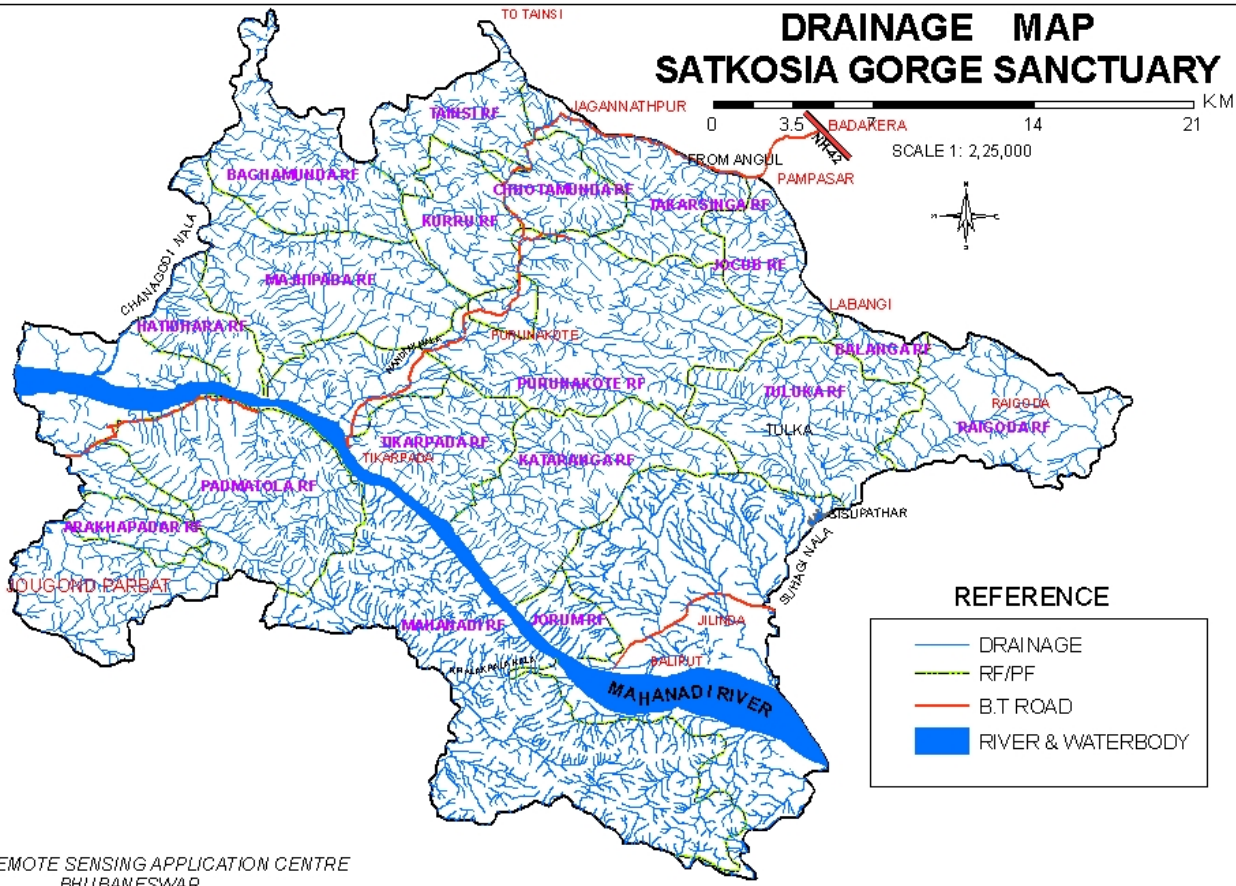


## REFERENCE

- RELOCATION ZONE
- FOREST VILLAGE ZONE
- ECO-TOURISM ZONE
- ECO-DEVELOPMENT ZONE
- WILDERNESS ZONE
- RF
- B.T ROAD
- METTALIC ROAD
- FOOT PATH / CART TRACK

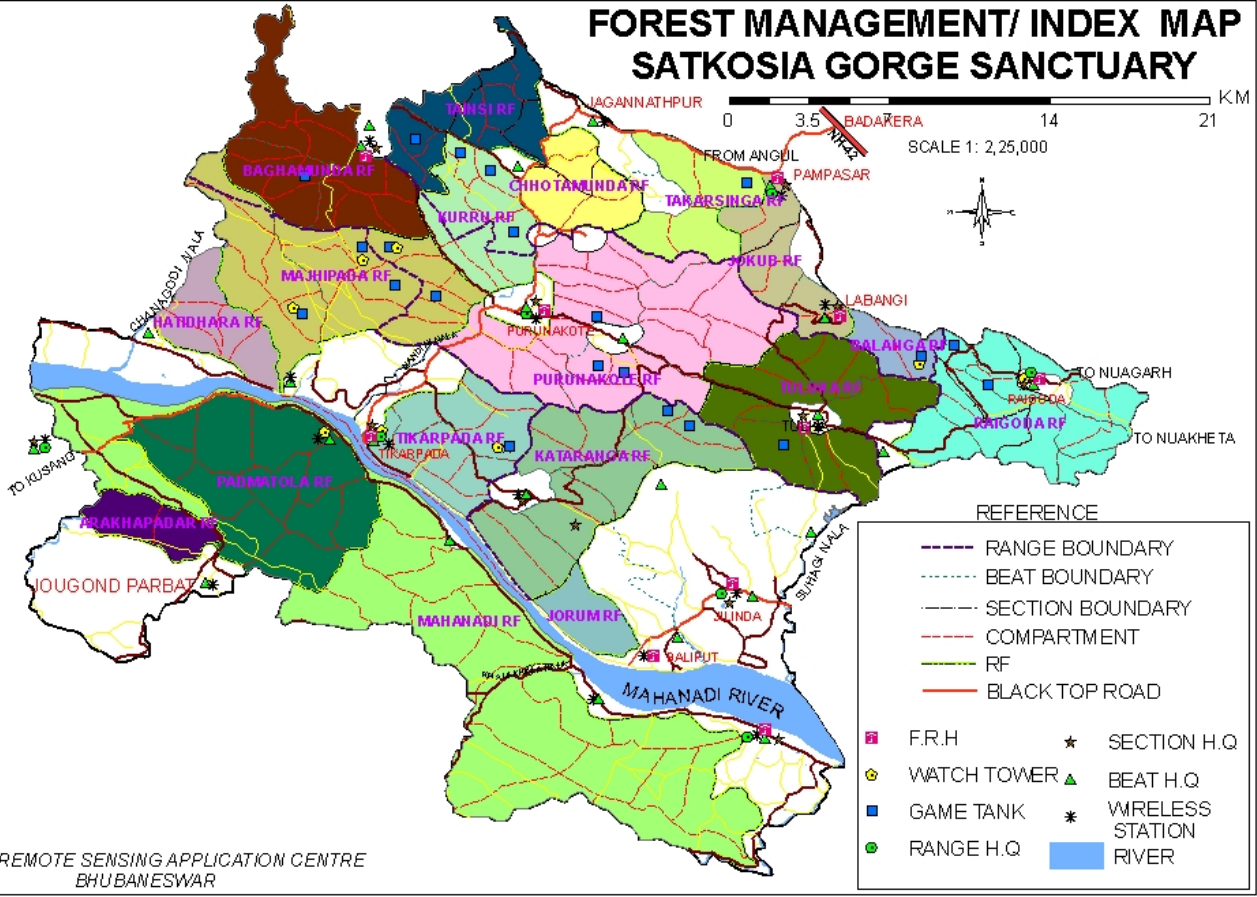
ORISSA REMOTE SENSING APPLICATION CENTRE  
BHUBANESWAR

# DRAINAGE MAP SATKOSIA GORGE SANCTUARY



ORISSA REMOTE SENSING APPLICATION CENTRE  
BHUBANESWAR

# FOREST MANAGEMENT/ INDEX MAP SATKOSIA GORGE SANCTUARY

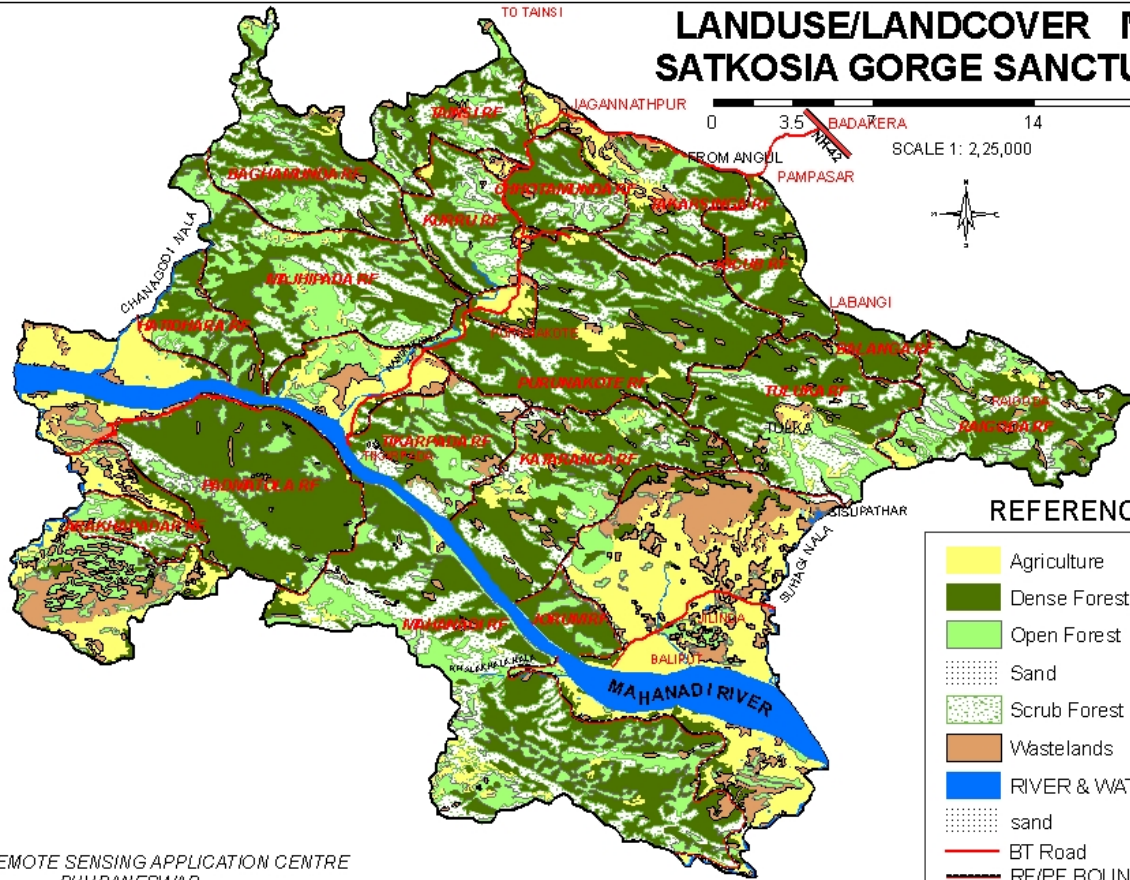


ORISSA REMOTE SENSING APPLICATION CENTRE  
BHUBANESWAR



# LANDUSE/LANDCOVER MAP SATKOSIA GORGE SANCTUARY

0 3.5 14 21 KM  
SCALE 1: 2,25,000



## REFERENCE

	Agriculture
	Dense Forest
	Open Forest
	Sand
	Scrub Forest
	Wastelands
	RIVER & WATERBODY
	sand
	BT Road
	RF/PF BOUNDARY

ORISSA REMOTE SENSING APPLICATION CENTRE  
BHUBANESWAR

# ROAD MAP SATKOSIA GORGE SANCTUARY

0 3.5 14 21 KM  
SCALE 1 : 2,25,000

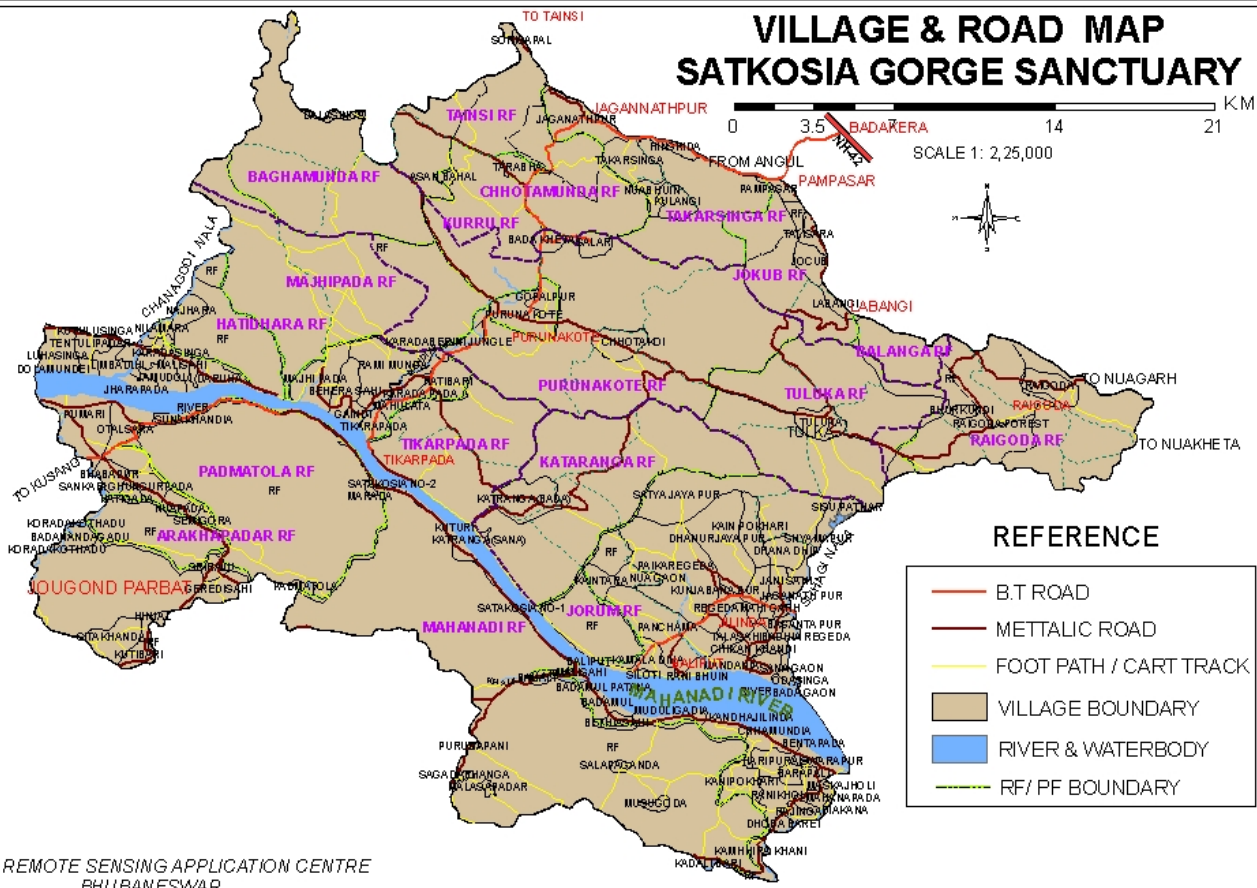


### REFERENCE

- B.T. ROAD
- METTALIC ROAD
- - - - FOOT PATH / CART TRACK
- RF/PF BOUNDARY
- RIVER & WATERBODY

# VILLAGE & ROAD MAP SATKOSIA GORGE SANCTUARY

0 3.5 14 21 KM  
SCALE 1: 2,25,000

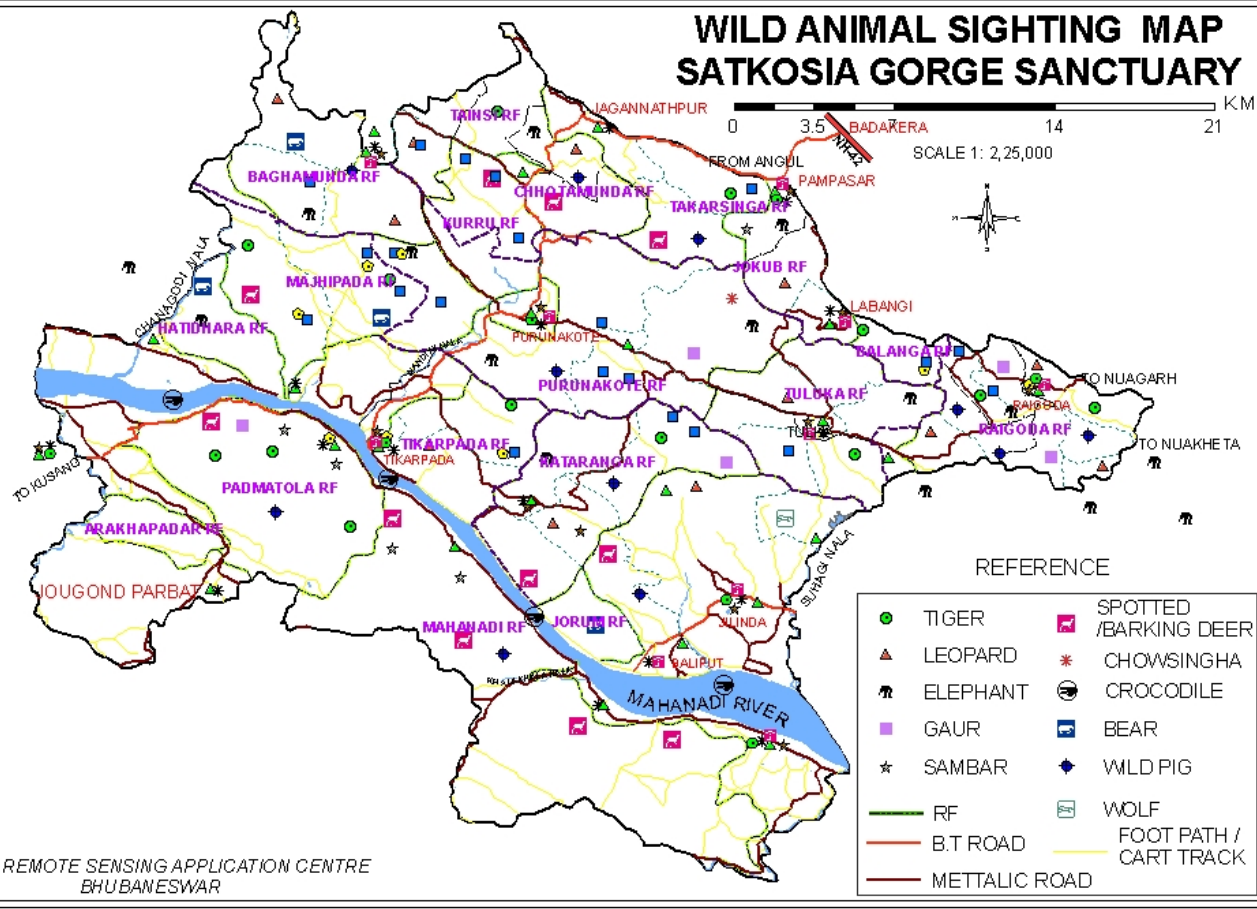


## REFERENCE

- B.T. ROAD
- METALLIC ROAD
- FOOT PATH / CART TRACK
- VILLAGE BOUNDARY
- RIVER & WATERBODY
- RF/ PF BOUNDARY

# WILD ANIMAL SIGHTING MAP SATKOSIA GORGE SANCTUARY

0 3.5 14 21 KM  
SCALE 1: 2,25,000



## REFERENCE

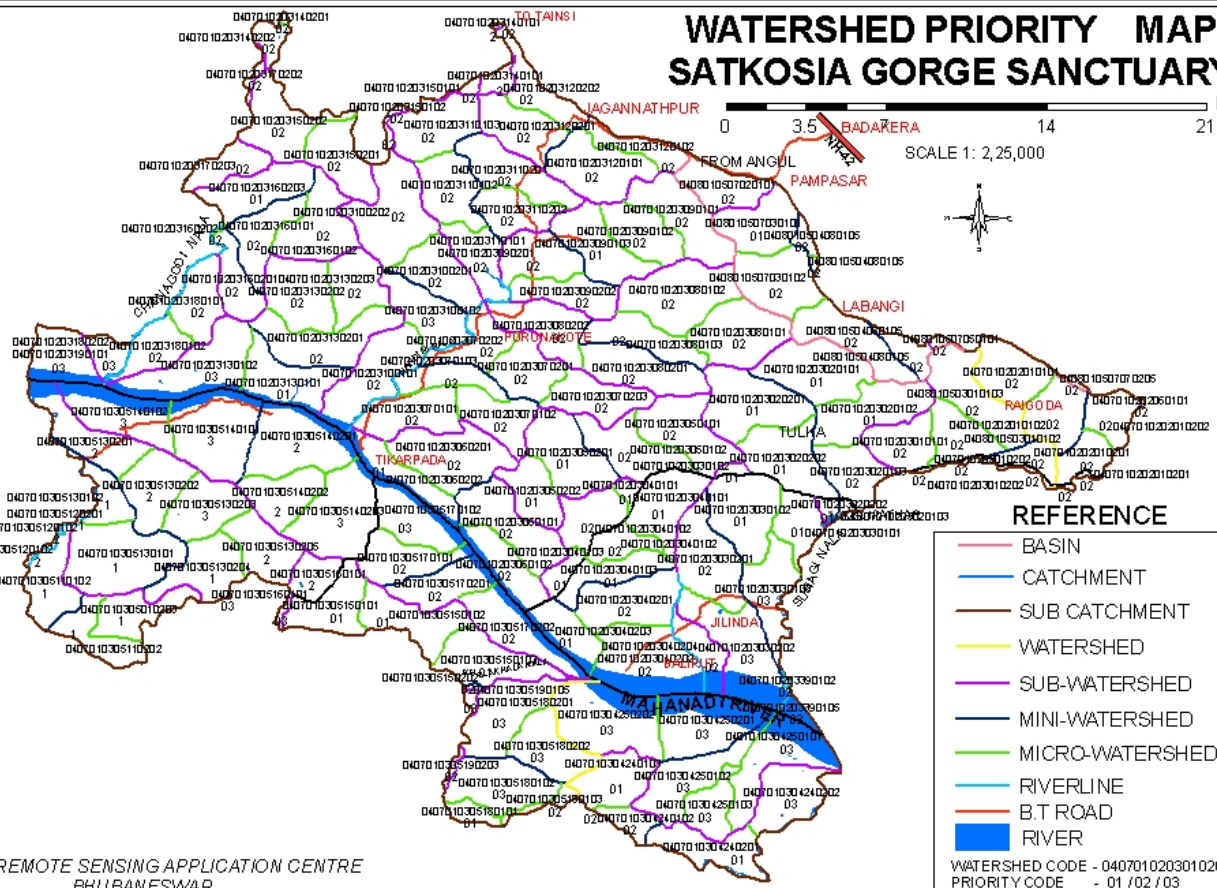
	TIGER		SPOTTED /BARKING DEER
	LEOPARD		CHOWSINGHA
	ELEPHANT		CROCODILE
	GAUR		BEAR
	SAMBAR		WILD PIG
	RF		WOLF
	B.T ROAD		FOOT PATH / CART TRACK
	METALLIC ROAD		

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# WATERSHED PRIORITY MAP SATKOSIA GORGE SANCTUARY

0 3.5 14 21 KM

SCALE 1 : 2,25,000



## REFERENCE

- BASIN
  - CATCHMENT
  - SUB CATCHMENT
  - WATERSHED
  - SUB-WATERSHED
  - MINI-WATERSHED
  - MICRO-WATERSHED
  - RIVERLINE
  - B.T ROAD
  - RIVER
- WATERSHED CODE - 0407010203010202  
PRIORITY CODE - 01 / 02 / 03

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BHUBANESWAR

