Similipal Biosphere : Genesis of Historicity

Samarendu Das
Balabhadra Prasad Das

The countless interferences and thereby its consequent infringement on nature have been a habitual trend with the man, and this phenomenon knew no bounds during the last one and half centuries of the Darbar Administration in Mayurbhanj. The Similipal hill reserve 2,750 sqkms. compact patch of broad leaved tropical natural forest classified by Champion and Seth as type-3/C North Indian Tropical Moist Decidious forests with its sub-types at different elevations, clads the massif with varied flora and fauna with species of Temperate forests also. Its unique geological formation, typical ecosystems controls and regulates the ecology of the North-east region. The imbalanced ecology, could be restored with the help of scientific forest management and by devoted knowledgeable foresters, improving the level required. The protected area, 50% of the massif, under Tiger Project came under Sl. No.1 - Conservation Forestry, classified in 1976 by National Commission on Agriculture and balance area under production forestry, ranking 3rd in the list, 2nd being social forestry. This protected area with V.H.F. and telephone connections all over the project area keeps the staff alert and encouraged. The offenders and intruders are scared and keep away. The declaration of Similipal as Biosphere got international status and provided more security and protection to the core, the national park, and the buffer, the sanctuary, as there shall be transitional zone around these two existing concentric protected areas with more conservational activities for conservation of the typical ecosystem in its natural form for good.

From the hoary past till the present, through out the annals of history of Mayurbhanj, many a chronicle and document referred to Similipal extensively at its various forms. At the rise and fall of Mayurbhanj in its glories and glooms, Similipal always remained as epicenter of activities. It witnessed as a mute spectator to the political development of Mayurbhanj; it shaped and groomed the economy and the culture of the people. Similipal at its fullest version is no less than an organic whole. For common man of Mayurbhanj; Similipal is a symbol of reverence and awe to them. It has the appeal of the religious sanctity, a coherent bend of cultural assimilation and a perinnial source of livilihood. Hence, Similipal, is not only hills and valleys, streams and rivers, ravines and waterfalls, but a bewildering panaroma of many hundreds of millions of trees, depicting a huge and mammoth canopy bloomed in green veils; it is more than a wordly endeavour, as it represents the heart throb and the emotions of the people of Mayurbhanj.

SIMILIPAL RESERVE FOREST

History of Mayurbhanj

Mayurbhanj is a small spot on the surface of the earth where the man has lived over fifty thousand years. The stone axe(hewn) and left over hearth to melt iron for arrow-heads and ploughshares are the evidences, speak of the early man living in the area. The tribal people of the area namely : - the Santals, the Kols, the Mundas and the Savaras speak Austro-Asiatic language. From the discovery of Kusan coins in Mayurbhanj and in other districts of Orissa, Dr. A.S. Altekar believed that one Indo-Scythian tribe called Murandas were ruling over the area during 2nd. and 3rd century A.D. But a tribe called "Bhanna" who were the probable ancestors of the Bhunja tribes, inhabiting this region during 6th century A.D. Two ruling families i.e. Mayuras and Bhanjas ruled over Bonai and Khijinga Mandals respectively. The capital of the later was Khijinga Kotta, the present Khiching. These two ruling families had close social and cultural relations. During 1361 A.D. the capital, Khijinga Kotta was destroyed by Sultan Firoz Saha Toghluq. So it was shifted to Haripur on the bank of river Subernarekha during 1400 A.D. and the name of the kingdom was changed to Mayurbhanj in commemoration of the traditional relation of Mayuras and Bhanja families.

The Bhanja dynasty ruled the state continuously since 9th century A.D. in succession which was then known as Khijinga Mandala covering the present area of Mayurbhanj and Keonjhar Districts as well as parts of Singhbhum and Midinapur districts now in Bihar and West Bengal states. During the Moghul period, the Bhanjas extended their teritory as far as the sea with capital at Haripur. During the reign of Maharani Sumitra Devi the capital was shifted to Baripada during the last part of 18th century and on 25th November 1803, it came under British occupation.

The history of Mayurbhanj, part-I, compiled by late Ramprasad Chand basing on records of British regime, gives an early account of the extensive deep jungle of Mayurbhanj, describing the expedition of Aliverdi Khan against Raja Jagardhar Bhanj in 1741. The writer quotes the following from the contemporary history Raiz-us-Saltin.

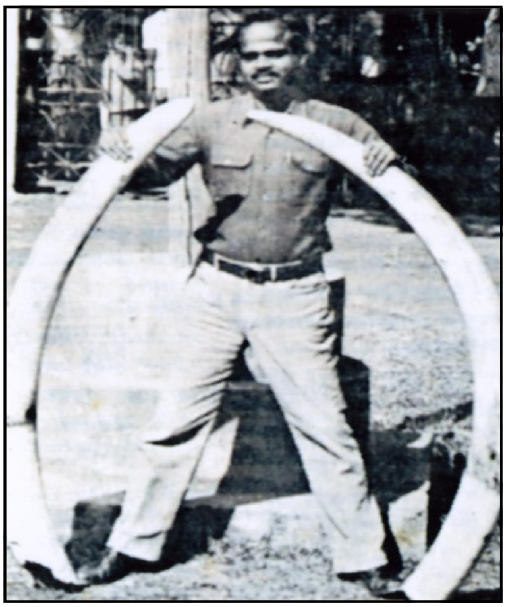
"The latter (Raja of Mayurbhanj) was at Haripur which contained his mansion and was at that time plunged in pleasures and amusements. His knowledge of the denseness of the forest that surrounded him coupled with his command of numerous hordes of Chawars and Khandaits made him feel insolent ... Raja seeing the superiority of the Aliverdi Khan's army, with his effects, followers and dependants fled to the top of the hill and hide himself in a secret fastness, beyond the keen of discovery. Similarly, cessation of Orissa by Marahattas in 1751 and during their struggle for independence, the Raja of Mayurbhanj had occasion to flee into the hills before the depredation of the Marahatta army. The author, therefore, records in his introduction to the above history. Thanks to the hills and jungles that spread across it and the indomitable spirit and political vision of the chief, it managed to survive the greed of either (British and Marahattas) powers. Later on, after the

annexation of Orissa in 1803 at the conclusion of the 2nd. Marahatta war, conditions continued to be the same and Mr. W.W. Hunter, the 1st. British Commissioner in his history of Orissa Vol.-II, page 113 writes :-

"Herds of elephants still roam through forests and mountains of Mayurbhanj and the English Officer in charge of the operation for catching them lately bagged upward a hundred fine animals during two seasons." (Senapati & Sahu-67).

Situation

The Similipal massif lies between 20^0-17' and 22^0-34' North latitudes and 85^0-40' and 87^0-40' and 87^0-10' East longitude comprising of nearly 2,750 Sqkms of compact forest, perhaps the largest single mass of natural forests, still left in this part of the country, This massif, not part of the Eastern Ghats or Gadjat hills, stands out in the north east corner of the Decan Plateau with its glory of varied tropical flora and fauna. The entire massif is separated from the Bengal Bay by a narrow strip of coastal plain. The monsoon and moisture laiden Bay wind have definite influence on the vegetation pattern. Nature has epitomised all her living resources in this massif.



Fully - Grown Tusks Capital & Bold

Topography

The hills rising very precipitiously from the plains of Baripada and Udala extend as far as Jashipur in North and Bisoi in the East and Thakurmunda in the West covering a total area of 2750 sqkms. with their innumerable crests and valleys and perinnial streams. Sir William Hunter describes Similipal Hills during 1872 as - "The hitherto almost unexplored mountains of Mayurbhanj heaped upon each other in noble masses of rock from 3,300 ft to 4,000 ft. high .... The peaks are densely wooded to the sumit, and except the regular passes, are inaccessable to the beasts of burden."

The Khairiburu, in south Similipal, amidst the group of hills is 1178 mtrs. whereas Meghasani is 1,165 mtrs. high. The elevation in the central region at Dhudurchampa is 1000.8 mtrs, that in the North at Chahala is 774.5 meters.

Drainage

The Similipal hills are drained eastward by a large number of perinnial streams and nalas flowing in all directions. They ultimately join with one of the main river systems such as - the Budhabalang, Baitarani and Subernarekha. The Khairi, Bhandan, Birol, West-Deo, Salandi, Khadkai and its tributaries flow into Subernarekha while the Budhabalang forms itself a river.

Geology, Rock, Soil

The sequence of rock of Similipal basin beginning with a well developed dark carbon phyllite as base and followed by a quartzite band which is conglomorate at places. Overlying this there is lower layer of spilitic lava with volcanic broceia. The three concentric cups of metamorphic rocks inter-beded with sub-metamorphic layer helps to increase the water

holding capacity. This geological formation is unique in the world. Out-crops of metamorphic sand stone and quartzites are to be found all over Similipal hills. They produce a redish and sandy soil in which Sal appears to be doing well. Most of the areas in Similipal have rich spread of red loam. Extensive pockets of laterite soil also come across on the plateau. Heavy clay is also found in the wide flat basin.

Climate

The climate of the massif is warm and humid. Summer is tolerable as the temperature hardly goes above 40^0C. Three distinct seasons are felt during the year. Rainy season starts from middle of June till October with rain fall of about 1250 mm in the monsonic leeward valleys, over 2000 mm is the general spread of the rainfall in the plateau. Frequent annual receiptal of 2500 mm is exprienced in some pockets and more in higher elevations inside Similipal. Winter creeps in gradually from October mid and becomes severe in December lowering temperature to 5^0C in many parts of the hill, with forest in valleys and open grass lands. The spring is pleasant. The southern and western aspects are cooler and north eastern aspects are warmer in Similipal is uncommon deviation due to its stategic situation. This geophysical condition influences floral and faunal distribution for microclimatic condition prevailing in this locality.

Barheipani Waterfall :Similipal

Similipal Forest during British Rule

What really has happened to the extensive and dense forests of Mayurbhanj between 1803 to the close of the last century is a matter of speculation and guess. With the advent of peace and settled conditions, agriculture flourished and new settlements came to exist. In this process lots of forest areas vanished, giving rise to new villages and cultivation. Mr. C.C. Hart at the time of his visit about the year 1895-1896 describes the forest of the state as follows :-

"The plain and accessable parts have already been denuded of mature Sal, except in one place in the plains of south west, where there is a little, which is three parts ruined by "Jhum" cultivation. The greater part of the mature Sal is to be found in the south western portions of the reserve forests and also in the central group of the hill forests. At a place called *Baraipani* for instance, there is as magnificent a Sal forest as it is possible to imagine, though certain areas which are situated in the more accessable localities have been partly denuded of their mature Sal."

Mr. Hart further describes that "All mature sal from the plain forests, which later comprised parts of Banahari, Muruda, Deoli and Udala ranges (of present Baripada Division) have disappeared by over exploitation except in the plains of south west i.e. in the present Panchpir and Thakurmunda ranges (of present Karanjia Division) where three quarter of the forests have been 'Jhumed'. About Similipal Hills he describes that except the accessable parts which was at the time very much limited, rest of the hill forests quite well preserved." (Mishra & Bose - 1975-74)

Forest Management during Darbar Administration

Beside the above, the annual administration report for 1885-86 of Mayurbhanj state gives an

idea of the forests of the state. The timber leases were granted to the contractors and traders from outside at nominal rates till 1885. The damage caused by the lessees of the forests was considerable as against the revenue realised. So the forests were worked departmentally till 1904 including Similipal and some other forests. The quantity exploited departmentally was less which used to be floated in shape of round logs in the river Budhabalang or by cart to Balasore depot for sale. In the year 1888 one Forest Ranger and a peon were oppointed for management of forests. The reserve forests of Mayurbhanj were under the management and control of the Forest Department whereas protected forests were under the charge of Revenue Department. The reserve forests were more or less stable and parmanent in nature but the protected forests maintained to meet the requirement of the royats and residents and were also subject to clearance for cultivation. The forest area being given under 'Amalanama' lease by the revenue authorities and leases for reclamation of reserve forests were being given under the special sanction of the ruling chief. Thus the extent of reserve forests and protected forests decreased.

In 1907 a State Forest Department was created with Mr. J.A. Martin, State Engineer as head of the Department. As the forest management intensified, the protective staff came under the jurisdiction of Mayurbhanj to manage :

1. Reserve Forests	1,152 sqml.
2. Protected Forests	675.5 sqml.
3. Cultivated area	1,944.5 sqml.
4. Waste Lands	471 sqml.

About 43% of the area of the state was covered by forests. The state followed the Indian Forest Act 1927 and had own Forest Manual. The forest settlement, survey and demarcation etc. used to be done in accordance with the Mannual and offences were punishable as provided under the Act. In 1906 a survey party demarcated the boundery line from Talabandh to Similipal Garh to form another working circle for giving lease to M/s B. Borooah & Co.

The history of long term leases for forest working to earn revenue for development of the state, is the past History of Mayurbhanj State Forests. The developmental activities like laying of roads, construction of buildings, rest houses were mainly confined to the Similipal only, besides, regular exploitation and intensification of the organisational set up for removal of contractual quantity of timber per annum. The terms and conditions for working Similipal forest under lease by several contractors shall speak how the forest became commercially less valuable, loosing trees below approach class. (Senapati & Sahu'86).

In 1904, the Mayurbhanj narrow guage line was built upto Baripada. This line was of immense use in transportation of timber in huge quantity extracted from plain forests, mainly reserves. For extension of the light railway line upto Bangiriposi and then to Talabandh M/s B. Borooah & Co. agreed to finance as a partner with condition that he should be given 30 (thirty) years monopoly lease of Similipal Reserve Forests on the existing terms and conditions of the 10 (ten) years lease granted to him during 1906. Further he wanted guarantee for a minimum of 5 to 7 lakh cft. of sawn timber annually under the proposed lease so as to make running of the railway profitable. He further wanted 30 (thirty) years lease of Myrobalans for collection and export and for other minor forest produces also. The following correspondances between the lessee and lessor shows the rigidity of each party to safe guard interest.

Mr. Borooah wanted 30 (thirty) years lease for Myroblans for collection and export and for

other forest produce of the state and prospecting licence for three years convertable to 30 (thirty) years mining lease for minerals of every description except those given to Tatas. The ruler in replay, wrote - "in the event of your guaranteeing goods trafic which will yeild a net profit of 3½% per annum on the capital expenditure on the railway, I shall have no objection to grant you lease of entire Similipal forests (subject to the limitation of the existing leases and termination) for timber operation for a period of 30 (thirty) years under similar terms and conditions as those attached to the one, you already hold, subject to such alternations as the British Government may propose. As regards to the additional clause you propose to add to the effect that the state will find sufficient trees to permit you being able to cut at least 5 to 7 lakh cft. of timber annually for 30 (thirty) years, I have to say that I can not accept the clause. I will alter the additional clause to the effect that in the event of your not being to secure 5 lakh cft. of timber in any year during 30 years, from timber of 6ft girth, the state will grant you permission to cut timber of any girth not below 5 ft. in girth for that year to make up the deficit. Excepting the monopoly of Mohua flowers and export of Lac, all other concessions including the prospecting licence are agreed to." To this the company wrote - "We beg to submit that it is only in anticipation of getting such guarantee from your Highness, that we accepted the undertaking (construction of railway and 3½ of annual profit on capital cost) we have therefore the honour to accept the alternative you have pleased to propose subject to the condition to the effect that if in any year we can not turn 5 lakh cft. of timber even by cutting trees upto 5 ft. in girth, our guarantee to your Highness to the extent of such deficit would stand cancelled." Although the company so writing wriggled out of the original undertaking regarding the construction

SIMILIPAL FOREST

of the railway the Chief in his letter 2nd. November 1907 accepted the modified proposal for 30 (thirty) years monopoly of Similipal forests. The proposed lease could not be executed immediately as 13 (thirteen) other contractors' leases were current in Similipal. The Maharaja died in 1912. The lease was finally executed during the Court of Wards management on 7th. February 1916, after further verification guaranteeing sufficient sal trees of 6 ft. and above girth to ensure a certain minimum return of sawn timber. This lease with further modification in 1936, guaranteeing a lower exploitable girth limit (4½ ft. girth) and permiting 8(eight) lakh cft. annually remained in force with all advantage to the lessee till February 1945.

In 1920-21 Mr. R.C. Ramsay, Poltical Agent of Orissa Feudatory States, during his visit observed that -" The forests contain many fine trees and there is a vast quantity of Sal timber available, at the same time, it is patent of any one that the state will sooner rather than later, be faced with a very long period when there will be no sal of merchantile size. The forests also contain numerous number of stag headed hallow, badly grown and dry rot is common. The younger trees which should form the drop 10 to 15 years hence, are exceptionally bad in this way and are utterly

valueless and only encumber the ground. True, we are in the 'Long period' referred to by the then political agent." Further wasteful conversion, recorded by Mr. Gagliardi (Additional Forest Officer) in his report in April 1929 is quoted here - "As the company do not extrect planks and scantlings, although according to lease, they were supposed to convert to the maximum, the wastage from log to sawn sleeper is 75%. I personally made a few measurements and found that this figure was correct. If the careful measurement were taken of a few thousand trees, the wastage I am convinced, would be over 80%". So the quantum of wastage was not given importance then. (Senapati & Sahu - 1967).

Worst of all, the sleeper conversion from round logs in Similipal by the lessee was done by portable sawmills, six in number, used to be shifted from place to place, depending on the number of logs stacked at the site. The sawers were recruited from Ranchi, Kolhan and Midinapur, of Bihar and West Bengal, mainly Santals, Kols and Mundas. These labourers were staying in temporary huts in camps in close proximity to work site. In north Similipal, Chahala, was one of the main active centers for execution and supervision of work with hundreds of recruited camp labourers. Sleepers used to be transported by wet slides from Baraghati to Talabandh. In transportation of timber, tractors were in use. The Eucallyptus villa, at Chahala near Forest Rest House, was constructed on the old plinth of the camp office of M/s B.B.T.T.Co. The Eucallyptus trees around the villa were planted by the company, which have witnessed all the ravages done to the flora and fauna of the massif and clearance of forests to begin the settlement and cultivation by the recruited camp labourers who were required to stay in camps round the year for extension of lease for 30 more years. So they resorted to stay in groups making clearances which paved path for gradual growth of villages inside Similipal from 1906. Added to this, Maharaja of Mayurbhanj gave 250 Acres. of Salami free 'Sardari-Jagiri to Sri Peter Dubraj, a labour contractor to establish permanent labour camp to facilitate sleeper operation. So he brought more Kols from Ranchi and settled them at Garh- Similipal, during 1922.

The major portion of Similipal massif was dense vergin natural forests infested with high density of wildlife. With the advancement of felling for sleeper conversion and clearance of forest growth for settlement at Garh-Similipal, Nawana etc. associated with indiscreminate hunting of herbivours, the tiger of Similipal started killing human-beings - the newly introduced timber workers to the valley. To stop the human killings and control the tigers, the timber contractor recruited one professional tiger killer from Ranchi. It is said, within one year this sikari eleminated more than 400 tigers to provide protection to the timber operators. The desendant of this tiger killer, one Sri Bhim Gunj alia Bhima Baghua and another Baghua are still practising the same methodology of killing tigers with poisoned bow-trap which is the full proof method to eleminate. The 30 year lease of Bholanath Borooah & Co. expired during 1946. There was no systematic working of the forests for which Similipal reserve during 36 years (1910-1946) lease, was worked twice and north Similipal three times. East Similipal which was withdrawn from the lease in the year 1922 was worked like the rest of the Similipal forests through several contractors. For this annual plans were drawn up fixing different areas to be exploited to keep engaged the recruited camp labourers of the contractor in timber operation round the year. Sri B.M. Dasgupta prepared the first working plan for whole of Similipal reserve forests for 20 years for working under Selection-cum-Improvement system. But after about six years Mr. Dasgupta's plan was replaced by the working plan of reserve

forest of Mayurbhanj district written by Mr. Sripal Jee during 1953-54, after integration of Mayurbhanj state to the Union of India on 6th November 1948 and became part of Orissa as a district on 1st January 1949 only. (Mishra & Bose' 75)

Introduction of Silviculture Management Systems

Similipal reserve and other forests of the district are being administered by Baripada and Karanjia Forest Divisions with the river Budhabalang as the natural boundary between the Divisions. In Similipal R.F. the scientific silvicultural management aimed at sustained yeild commenced from 1953-1954, on introduction of Jee's Plan which for the first time divided the Similipal reserve into felling series, Blocks and Compartments for working under selection-cum-improvement system with 20 years felling cycle and regular tending operations. Marking rule fixing exploitable girth area and species-wise with retaintion in 3 of exploitable size was prescribed only for Sal and 12" (30 cm.) dia was for improvement felling in Similipal R.F. But these prescriptions of the working plan were not followed properly and the marking done by un-trained staff was revenue oriented. The plan did not prescribe for retaintion of the non-sal species which resulted in removal of valuable spp. lime Pia-sal, Champa, Gambhari, Kurum, Sissoo, Bandhan etc., yeilding higher revenue but the Sal of exploitable size and approach class and below were of less quantity for removal during Darbar rule. The annual yeild is regulated by area. So annual coupes are marked and formed into lots notified in Gazettee for auction sale. The highest bidder takes the coupe on contract for specific time. After expiry of Jee's Plan it was revised during 1973-74 and separate plan for Baripada and Karanjia Divisions were compiled by Sri S.Bose and Sri R. Mishra, IFS respectively. The sample stock enumeration for first time was done and exploitable girth limit for different marketable spp. was fixed. The Selection-cum-Improvement system of working was prescribed with retaintion per cent calculated to prescribe yeild by Smythies' formula using the sample enumeration figures, was observed by the I.G. forest to be at higher side as the value of 't' the time taken by the approach class to attain exploitable size, was incorrect as a result more number of stems of exploitable were removed. The C.C.F., Orissa ordered for upward revision of the exploitable were removed. The C.C.F., Orissa ordered for upward revision of the exploitable girths of different species. The availability of non-sal exploitable size tree in Similipal R.F. Like the one mentioned here increased the revenue with low percent of sal attracted attention of many. That the then D.F.O. Sri, Trilochan Rath, I.F.S., Karanjia Division recorded -" Tree No.152, species - Champa (Michelia champaca), girth - 540 cm, marked during 1974-75 in coupe No.III, lot No.1 of Kendumundi Felling Series, Jamua Block, Telsim Compartment No.9 yeilded 33.4008 cum. of timber from 54 logs. Such trees still exist, though rare. The removal of such mature over size trees from top story created lasting gap in the canopy. The endemic species invaded the area and filled up the gap for favourable conditionals. Thus making good to replanish the volume of lost biomass and rebuild the lost/dislinked ecological systems of the massif's house hold.

Vegetation is the parameter of ecology. The vegetative cover of Similipal is of much importance as it contains rich tropical broad leaved forest types broadly classified by C.H.Champion and S.K. Seth as "3C- North Indian Tropical Moist Decidious", covers a large chunk of area in the massif. This forest comprising a compact block contains Semi-Evergreen forest,

Sal sheds leaf and becomes leafless for 10 to 15 days during summer. It gets preference over other species as the principal species in forestry management. Further it is a very good coppicer, drought resistant, tolarant to frost, fire and grazing. Though sal is common in Similipal valley, is able to servive with a few other frost resistant species found in Tinadhia, Jamua, Nawana, Similipal-Garh, Meghasani areas. (Mishra & Bose-1973).

Ecology of Similipal Hill Forest

The biodiversity of Similipal reserve forests with its typical ecosystems, is the benevolent gift of nature to living beings. The regulatory and functionary role of the massif in maintaining the ecological balance and regulating the ecosystems suffer from temporary set back and dislinks caused by the biotic factors specially by fire, grazing, poaching, clearfelling and frost. The nefty massif covered by forest growth stands as a barrier on the tropic of cancer on the north eastern edge of the Decan Plateau. The south west monsoon wind passing over the Bay of Bengal in nothernly direction hits the hill range and gets deflected inducing rain in coastal areas and in interiors of south west Orissa. The low pressure cyclonic storms created in the Bay of Bengal when passes over the sea coast near Balasore get obstruction from the massif causing heavy rain. The vegetative cover influence and regulate the rainfall, modulate atmospheric temperature, checks the velocity of wind flow, holds up water by rootsystem at high altitudes, provides shed, shelter and food to birds and animals, enriches atmosphere with moisture by transpiration. The purification of air by plant photosynthesis made by assimilation of Carbon Di-oxide from the atmospheric air and in the process Oxygen is released to the air for use by animal kingdom - the great inter dependant relation of plant and animal. Thus the quantum of Oxygen, so released

WATCH TOWER

to the atmosphere by the plant kingdom, is very huge and its correct estimation is difficult.

Hence, the availability of pure Oxygen to the organisms under the zone of influence of the hill reserve, shall reap the benefit of utilisation of Oxygen, till existance of the forest cover in the Similipal massif with the living ecosystems. Further, aspectual deviation is noticed only for the strategic situation of the massif, southern and western aspects being cooler. So the difference in vegetation pattern with forest types is met.

Besides the above, the forest cover of the Similipal hill reduces the velocity of the rain drops, speed of the run-off, prevent erosion of land from water and wind, reduces flood intensity, charges the ground water reserve by uptimum percolation of rain water which later serve as perinnial water supply source of nallas and streams throughout the year. The mode of perinnial water flow is the part of typical ecosystems of the Similipal-hill-forests which is sending down the following river-systems in all directions which poet Radha-nath Ray describes as under.

Salmali Sainlu tini sthane tini tatini jhare,
Langhi nana bane janapade mishe banga sagare.

Uttare balangi madhye gangahara shona dakshine,
Jala beni barne kurangi nayana nilima jine.

From different parts of the Similipal hills three rivers rise and flow through wooded and inhabited regions and fall into the Bay of Bengal in the east. The Budhabalang which forms itself into a river, flows in the north, Gangadhar in the middle and the Sone flows in the south. But the Kharkai, the Salandi and numerous other tributaries rising from the Similipal hills fall into Baitarani and Subernarekha. Other rivers originate from Similipal are - Deo, Khairi, Bhandan and Jamira. These water ways meet the requirement of the plains encircling the massif and central plains. The storms and cyclones cause immence damage to the forest cover, besides, occurance of dust storm in summer. It is stongly presumed by the ecologists that due to heavy storm in the past the vast stretches of forest cover were damaged and such patches have given rise to grass lands in higher altitudes, slopes and valleys of the massif, embracing a typical ecosystem with varied flora and fauna of Savanna forest. The Similipal gets good precepitation from dews, frost, mist etc., over and above, it receives from rains. The edaphi conditions are favourable to the soil organism namely - soil bactrias, fungii, actinomycetes, protozoas, soil arthopoda etc. for moist and humid condition suitable for them to grow and act. Thus the condition has catalitic action to accelarate the process of conversion leaf litters to soil by these soil organisms, with others present, to complete the process. The healthy condition of the soil is apparent from the fact that the biomas, of about 12 (twelve) tonnes / hacter / annum, is actively decomposed by the organisms to prepare the top soil layer and supplimenting the nutrients to maintain the fertility gradient. This ecosystem is more rapid and juvenile in the moist valleys of the Similipal hill forest. The moist and humid condition enables the Similipal to proudly embrace the leaches as the ecological parameter of Tropical Ever-Green Forest. In this ecosystem, about 90 species of epiphytic and teresterrial orchid flora with several colour and fragrance is found on stems, branches of trees and also on forest floor. This ecosystem provide healthy condition for growth of several variety of edible fungii inside the valley which is collected by the people and suppliment their protin requirement. Similipal produces tonnes of edible variety which has much demand as it is delicious and nutrient. Further this ecosystem bear the major honey production area in Similipal. The inhabitants at and around the massif depend very much on this hill reserve to collect several kinds of roots and tubers, flowers and fruits, leaves and barks, gums and resins, honey and ax lac and cucoons etc. to earn livilihood, which the ecosystem provides from time immemorial. The tender structer and function of natural systems are very fine and delicate which gets interupted if the interaction among the living and non-living organisims is disturbed which takes time for restoration.

Forest Types in Similipal

During 1958, the Botanical Survey of India made survey of vegetation and flora of the District of Mayurbhanj besides the floral survey of Dr. Mooney and Haines during 1950 and 1924 respectively. But the standard classification of the broad leaved tropical forest types and sub-types in the single compact block of Similipal has been made by Mr. C.H. Champion and S.K. Seth as "3C-North Indian Tropical Moist Decidious". This forest covers prominently a large area in the massif. (The types and sub-types met in Similipal hill range with crop composition are as follows :

Floral Diversity

The vegetation of Similipal comprises of Northern tropical semi-evergreen forest, Northern tropical moist deciduous forest, Dry deciduous hill forest, High level Sal forest, and grassland and Savannah. It is the abode of 94

species of orchids and 1076 species of other plants. These include 3 species of orchids, which are endemic, 8 plants which are endangered, 8 plants species whose status is vulnerable and there are 34 other rare species of plants. Endemism is high among tree ferns, orchids and medicinal plants. The endemic orchids are Eria meghasaniensis, tyna hookeriena and Bulbophyllum panigrahianum. The endemic paddy plants are Oryta officianalis and O. granulata. Similarly there is an endemic aquatic grass namely Coix aquatica.

Story Ranjan (Oougenia), Amla (Emblica officinalis; Sunari (Cassia fistula), Chara (Buchnania lanjan). Shurbs met are Carissa spinarum, Holarrhena antidysenterica, etc. Bamboo is absent. Climbers are - Eauhinia vahli, Butea superba, smilax zylanica,

(iii). Moist Peninsular Sal

Sub-type 3C/2e (iii)

This sub-type is found all over the area in Similipal hills up to an elevation of 800 meters above M.S.L.Sal comes up very well in fertiginous loams and loamy clays. The quality of Sal is good (QII/III) and natural regeneration is adequate. This sub-type constitute the major forest crop and is of economic value. The associates of Sal are :- Terminalia alata, (Asan), Terminalia belerica (Bahada), Adina cordifolia (Koima/Kuruma), Pterocarpus marsupium (Piasal/Bija), Schleichera oleosa (Kusum), Bombax malbarica, (Simul), Michelia champaca (champa), Alstonia scholaris (Chhatina) etc. The middle storey is represented by - Syzygium cumini (Jamu), Gugeinia cojeinesis (Panjan/Bandhan), Miliusa velutina (Dosal/Com-sal), Trema orientalis (Kakara, Rukuni), Emblica officinalis (Aonala), Cassia fistula (Sunari), Helicteres isora (Murmundi, Modimodika) etc. The shrub and under growth are - Indigofrapulchella (Gibri, Gira), Moghnia chapper, Ardisia solanacea, Flemingia chappar, Strobilanthes species, Clerodendron viscosum etc. and Wendlandia excerta (Zilam), Imperata arundinacea (Joon Grass) is very common. Cymbopogon martini (Rusa Grass), Eulaliopsis binata (Sabai Grass), Anthistiria gigantia are also found. Thysandelaenea (Phulajhadu/Flower Broom) occurs in small quantity near water courses. Among rhizomatous plants - Curcuma aromatica (Palua) are found more commonly near nalas. In very moist places orchids and farns are found. The common climbers are Bauhinia Valhi (Siali climber), Milletia auriculata (Gora), Smilax macrophylla (Muturi/Juchuri /Ram Dantan) Combretum decandrum (Atundi) on moist red soil and laterite and Dioscora bulbifera (Pita alu), Asparagus spp. is found.

(iv). Moist Sal Savannah

Type - 3c/DSI.

This type occurs in hill tops, dry hill slopes and high valleys above 800 meter elevation inside Similipal hills. The cause of these vast openings are presumed to be either the old village clearances or the cyclones in the past, frost and fire. In suitable river bank graziers set fire to the dry grass every year and maintain those in their own interest. These grass lands are excellent grazing grounds, devoid of tree cover, the frost and annual fire have completed the retrogation. Frost is problematic for sal to regenerate and establish. Factors like dying - back, frost lifting and blisters kill Sal sapling/poles up to 8 meters height. But it occurs scattered in the grassy land with species like Eugenia uperculata, Phoenix sylvestris, Simplocos racemosa and Dilliena pentagyna. In patches over these areas dense bushy seedlings of Sal with stunted growth, growth restricted by annual frosts are found around Nawana, Jamu, Tinadhia and upper Budhabalang basin.The common grasses

found are Imperata Arundinacea, Anthes tiria gigantea and Sacharum spontaneum. Fragmites karka are near water courses only.

(v). Orissa Tropical Semi-Evergreen Forest

Type - 2 B / 3C.

This type is confined to deep and damp valleys of the perennial streams and nalas found in small pockets inside Similipal hills having a number of decidious trees in the top storey. They are leafless for a short period, but the second storey is evergreen. The ground storey is covered with evergreen shrubs. Sal is absent/rare. No grass for the shade of the closed canopy. The species in the top canopy found are - Michelia Champaca, Artocarpas lacoocha (Jeota), Cedrela ciliata (Toon), Mangifera indica (Amba) Allanthaus excelsa (Magaki/Mahanim), Bridelia retusa (Kasi), Mesua ferrea (Nageswar), Xylia Xylocarpa (Bakhira/Kangada), Polyalthea cerasioides (Champati), Macaranga peltata (Manda), Litvala nitida, Anthocepalus indica, Amoora dohituka Bischophia javanica, Syzizium cuminii etc. Under storey is mainly with Leea crispa, Curcuma aromatica, Salix tetrasperma and Trewia nudiflora which are found on stream banks.

(vi). Very Moist Peninsular Sal

Type - 2 B / 3 C

This type occupies pockets in the deep and damp valleys like (2B/3C) type with difference that Sal is absent. According to Champion and Seth, much of the area occupied by this type is a stable Sub-Climax to Semi-Evergreen (2B/3C) conditioned by burning. On introduction of fire protection, progression rapidly starts with establishment of a dense evergreen under growth including tree species. This fact indicates that parts of Sal forest may be of secondary origin, an edaphic climax occurring only on well drained ridges and slopes. It gradually merges with the Moist Peninsular type.

The main associates of Sal in the top storey are :- Dillenia pentagy, Terminalla alata, Bridelia retusa, Adina cordifolia (Kaim/Kurum), Bombax ceiba (Simul), Alstonia scholaris (Chhatiana), Anthocephalus Indicus (Kadamba), Lagerstroemia parviflora (Sidha), Polyalthia spp., Litsea nitida, etc. Bamboo is absent. The common shrubs found are - Webera corymbosa, Ardisia solanacea, Leea spp, Macaranga peltata and Strobilanthes spp.. Grass such as Panicum and Imperata and climbers like - Bauhinia vahlii, and Butea superba. This type is of greater importance than the Semi-evergreen type because it contains rich percentage of good quality Sal.

(Vii). Moist Mixed Decidious Forests.

Type - 3C / 3C

This type is found in patches all over the hills having favourable edaphic conditions mainly drainage and moisture congenial for sustainance and growth of Sal. The deep damp valley with moisture and inadequate drainage is not suitable for Sal. Such tracks are occupied by the tropical semi-evergreen species whereas in moist mixed deciduous forests, Sal is rare or absent, appear to be seral with favourable condition can come up with dominance and characterize the climax formation. It is noteworthy that although south and east Similipal hills gets maximum rain, being first to intercept the monsoon winds, it supports a very dry mixed type of forests with many of its species, tending to be xerophytes due to poor water retaining capacity of the soil making stunted growth of Sal in vast stretch as it is not suitable for Sal. This type occuring in portions of several compartment of the massif namely - Khairi, Balang West, Khadkei, contains low per centage of Sal. The top canopy of the type is represented by - Xylia xylocarpa, pentagyna, Bridelia retusa,

Terminelia alata, Hymenodictyon excelsum, michelia champaca, etc. The middle storey is represented by kydia calycina, Anogeissus latifolia, Alangium lamerkii, Polyalthia Spp. The under storey comprises species like Nyctanthes arbortrut is, Helcteres isora, Colebrookia oppositifolia, etc., and common climbers are - Bauhinia vahlii, Millettia auriculata, Dioscorea spp. etc.

(viii). Dry Peninsular Sal Forests

Type - 5 B/ Cic.

This type of forest is confined to parts of hill blocks outside the Similipal reserves, where though the rainfall is high, the condition is not favourable for development of moist Sal due to edaphic factors. Blocks like Satakosia, Jari, Kanapat, Tunguru, Sarali, etc. receives good rainfall but the soil is shallow with laterite strata or is calcareous. It bears Sal in good proportion but of poor quality (QIV) and unsoundness is common even in low age. The steep slopes and ridges of the hills where the drainage and moisture condition becomes acute Sal give room to associate species.)

Scientific Management of Wildlife

The flora and fauna are inter-connected, inter-related and inter-dependant. Healthy forest cover embraces verieties of fauna depending on it, subject to limitation of its carrying capacity. Extinction of one species of plant kingdom causes elimination of 30 (thirty) faunal Spp. Government visualizing the trend of Biological depletion started the systematic and scientific management, to look after the wildlife of the Similipal reserve forests by creating a National Park during 1957 with Head quarters at Jashipur. A handful of staff headed by one Asst. Conservator of Forest were deployed to look after the protection of Similipal Forest and simultaneously engaged in collection of arrowroot, honey, wax, resin etc. During 5th Plan period the Similipal Tiger Reserve was created in 1973 under the scheme Project Tiger, launched by Government of India, with full central finance. But the central finance was reduced to 50 % and the rest of 50 % became the State share from 6th Plan period. On creation of the tiger reserve the national park Division with its infrastructure merged with tiger project, as the wildlife management remained with the Similipal Tiger Reserve.

Tiger Project

The Tiger Project had two demarcated zones namely- Core and Buffer. The management of wild life of the whole project and protection of the core area remained with the Director of Tiger Project. The habitat study and preparation of management plan was prepared by Late S.R.Chaudhury, I.F.S., the first Field Director of Similipal Tiger Project. The model of advanced strategy of management was coined for growth of wild life and improvement of the ecosystem of the Similipal Hill Reserve. The protective staff of the Project Tiger effectively controlled the poaching and improved the habitat by developing pasture grounds, salt licks and water bonds. The V.H.F. and net work of telephone connections to staff head-quarters all over the project area, to communicate the incident of poaching or illicit

Normal coloured Tiger

cutting could be curbed down the forest to the minimum. The supply of weapons to the staff for self-protection from wildlife and poachers/ offenders gives enough moral confidence to combat with the offenders and poachers. The roads developed over 360 kms out of 947 kms by the S.F.D.C. Ltd. facilitated for protection and patrolling in the interior areas of the massif round the year.

Similipal soon became familiar in and out side the country for the tigress reared and brought up by Late Saroj Raj Choudhury, the Field Director, The cub presented to him by the Kharias of Similipal was maintained for study of behaviour, habit and instinct as well as aspects of reproductive biology, senses and inter- specific intractions of the free-living tigress.

The conservative eco-conservation strategy augmented by the managers of the tiger project, resulted in the increase of the number of the highest predator of the biological pyramid, the Tiger, from 17 in 1973 to 99 in 2002. The increase in the population of Royal Bengal Tigers (Panthera tigris) amply speaks of the revived healthy ecological condition where the tiger and other carnivour and herbivour live. Any change in the ecosystem will adversely influence the biodiversity, causing loss or even extinction of the epecies. To reduce the man-animal conflict, proposal was mooted to evict and resettle the 62 villagers outside the project area as about 95% of the inhabitants are Adivasis. Most of the plain forests have been encroached for agriculture thus shrinking the wildlife habitate. When the animals stray in to their crop field, they kill those and even the elephants with poisoned arrow or bullet shots. More disappointing is that these villagers being directed or accompanied by Shikaries/poachers kill the male elephant for ivory, the tusk. The tusk hunting racket is operating all over the country. During crop season of October - November, the elephants are shot with poisoned arrows in the temple and under the ears as a result of which is grounded after a month or two and succumb to the injury. Till then the gang members of the arrow hitter keep track of the animal who in right moment extract the tusks and hand over those to the trader to get the balance dues. One 70 year old elephant, who met his last on 30th. December 1983 in Gorumahisani R.F. of Rairangpur Sub-division after being hit by the poachers. The Forest Officials were monitering the movement of the animal. After his death the D.F.O. and his staff salvaged the tusks measuring 6ft. 2" (R) and 5 ft. 8" (L) weighing 38.600 kg.

Project Elephant

The elephant is an Schedule - I animal under the Wildlife (Protection) Act. 1972. The Project Elephant was launched in February 1992 by Government of India for Conservation of Elephants. Since 1991 the ivory trade is completly banned. The impact of conservation and the security of their habitat is the primary necessity for survival of the elephants in our country. Their migration paths and the corridors need to be protected and poaching for tusks is to be prevented. The impact of conservation was on Similipal and 700 sq.kms. was covered under the Project Elephants. Initially the Project Tiger in

Tusker in sal habitat

Similipal extended over only 330 sq.kms which was latter extended to 2750 sq.kms with core zone of 845 sqkms and buffer zone of 1905 sqkms being overlapped by tourism zone. The elephant population in Similipal is an increasing trend because of the healthy ecological biodiversity. There are more than 512 elephants. the carrying capacity of the area under the prevailing ecosystem keeps the elephants and other fauna in healthy condition.

National Park, Sanctuary - Protected Area - The Indian Board of Wildlife defined National Park as "an area dedicated by the statute for all time to conserve scenery, national and historical objects of national significance and wildlife and where provision is made for enjoyment of the same by public." The project core area has been notified as National Park by Govt. on 6.8.80 and buffer as sanctuary, both under the Wildlife (Protection) Act. 1972 dated 13.12.79. The Indian Board of Wildlife had also defined Sanctuary as "an area where killing or capturing of any animal species of bird or animal is prohibitated except under orders of competent authority and whose boundaries and character should be sacrosant as far as possible." The Board has further clarified the position by stating that while the management of sanctuary does not involve suspension or restriction of normal forestry operation it is desirable to set aside a completely sacrosant area within a sanctuary to be known as "Abhayaranya." It is also indicated that the sanctuaries should be made accessible to the public ... (Stracey-63)

Thus the protected area of 2,750 kms. of Similipal Reserve Forests is the conglomeration of National Park, Project Tiger and Sanctuary. In wildlife management national parks are given high level of protection and, prohibitions and restrictions have been made under Clause (6 & 7) of Section 35 and provisions of Section 27, 28 and 30, 31 and 32 and Clause a, b, c, of Section 33 and 34 of Wildlife (Protection) Act 1972 is being applied in the protected area - Similipal, as required in the best interest of the management of the park.

Akhand Sikar

The tribal hunt on the day following Pana Sankranti in Mayurbhanj district is widely known as *Akhanda Sikar* which is in vogue since Darbar Rule and is observed for one day. But the *Akanda Sikar* now-a-days spreads over more than one month, with indiscriminate killings of all types of game without discrimination, followed by picnics and merry-makings. To resist and combat the mass killing operation of Adivasis the government mechinary remain very busy and alert even after deployment of Forest, Police and A.P.R. forces in large number all armed, to save the animals but little effect. Of course some offenders are used to be booked during this preventive operation. The killing and poaching inside protected area of Similipal has not been stopped completely for reasons earlier mentioned. The history of the State describes about the engagement and involvement of the local people in *Akhanda Paridhi*, *Haka* and *Kheda* operation besides Sikar which was sports for royal family and their guests. Elephant capturing though costly was also practised in Mayurbhanj. Such methods have been imprinted in the minds of the people of the area who usually never hesitate to eleminate even the species like elephants without fear. Such incidents are also not very uncommon in the other Protected areas. Such people are still in operation in the protected areas.

Similipal Development Corporation

During seventies, Similipal forest was considered suitable by the National Commission on Agriculture for aggressive man-made forestry

with tropical pine and other first growing hard wood species, for plantation project. It was suggested that the lower slopes of Similipal upto 300 meter elevation should be clearfelled and planted with teak which has high value and demand inside and outside the country and to plant up the upper slope with tropical pine. The yeild per hector was estimated as 10 cum. per hector per annum with annual yeild of more than 20 lakh of cubic meter as against the recorded annual yeild of about 50,000 cum. This proposal was strongly protested by Sri Sripal Jee, IFS, the Chief Conservator of Forests who put forth his views that the clearfelling of the natural forest and planting up with other species shall badly affect the ecosystem and environment. So, it was suggested to fully exploit the sal seed potential of Similipal forests by improving the infrastructural facility and to attract the institutional finance for all round development of Similipal. The Similipal Development Corporation was registered on 14.12.1979 with authorised capital of rupees two crores. Accordingly, production oriented management plan for the natural forests was prepared for saving Similipal from ecological disaster. The S.F.D.C. started its ecofriendly operation from 1st April 1980 for environmental upgradation and improvement of the ecology of the area as well as socio-economic condition of the people. For all round development of Similipal 2228 sqkms area, excluding protected area, was given on lease for 20 years. The S.F.D.C. undertook stock mapping and enumeration of the standing crop. According to enumeration figure there were as many as 3.41 crores of trees above 30 cm girth out of which 2.83 crores were sound and 0.58 crores were unsound. Of these, trees of 150 cm and up in girth were 14.77 lakh sound and 4.85 lakh unsound. Trees above 150 cm and above girth 73000 sound and 24000 unsound were available for exploitation with 20 years felling cycle, without affecting the future yeild. (Kanungo'85).

The objective of the corporation was to increase the timber and firewood production, maximisation of M.F.P. collection from the Similipal forests to develop and improve the road links inside the massif for all-weather communication and other need-based infrastructural developments. The Corporation aimed to improve the growing stock by silvicultural operations and compensatory planting, besides giving protection to forests from illegal felling, poaching and fire. As such the management and protection of Similipal Reserve Forest, except the core area of the Project Tiger, which covers the sanctuary, became the responsibility of the S.F.D.C. Ltd. For effective management of wildlife, the Project Managers of the S.F.D.C. were declared as Wildlife Wardens in their respective jurisdictions. Further, the Deputy Managers were also delegated with concurrant powers of forest officers under the Wildlife (protection) Act 1972. The road length inside Similipal is 947 kms out of which about 360 kms were developed by S.F.D.C. under the process of infrastructure development which facilitated amply for protection and patrolling. In persuance to the objectives, the corporation continued to maximise the collection of M.F.P., timber extraction, setting up M.F.P. processing, packing, bottling units, construction of culverts and bridges with widening and improvement of roads for extraction of forest produce and facilitate development of tourism. Necessary programme and plan was prepared by the corporation for economic development of the local people who are mainly Adivasis. To reduce pressure on the forest, schemes were made to provide alternative, to earn livilihood. During its working for three years only, generated 10, 18 and 23 lakh man days during 1980-81 to 1982-83, respectively

benefiting the local tribals and Adivasis, living below the proverty line. The eco-friendly and eco-development measures of the corporation with phased programme of socio-economic development of the local people to keep away from forest and gain support of the public for protection and conservation of the forests of Similipal could not be materilalised, as the tree felling in Similipal was stopped by Government, by issue of ban order from April 1982, basing on the recommendation of the House Committee of the State Assembly and at least it was merged with its libility and assets with the Forest Development Corporation Ltd. and functions as an unit only.

People in Similipal

The bulk of the people inside and in the periphery of Similipal are of aboriginal status. Some of them are in their authocathonal primitiveness as in the case of Eranga Kharias, the Mankidias and the Sabharas who mainly live in the forests. The Eranga Kharias consider Similipal as their primordial home and they live in the forest and depend entirely on it. Most of the minor forest produce like - honey, wax, resin, arrowroot etc. are collected by Kharias. Bhagatas, Bhumija, Dals, Desua Bhumija, Dharuas, Kisans, Kondhs, Matyas, Omantyas, Orangs, Parajas, Prengas, Rajuars and Saharas are not many and do not have any influance on Similipal. The Santals who constitute more than half the population of tribals of the district are the most advanced among the tribals. They are hard working, cleanly dressed agriculturists - with high sensitivity to environmental aesthetics. The Bhumijas, Bhuiyans, Hos and Gonds are major groups, who are settled agriculturists and are advanced. The Pauri Bhuiyans live near the forests and collects food from forest. The Mahalis are basket makers and the Sounties are mostly landless labourers who live on wage earning. Mankidias lead nomadic life, collect siali fiber, make ropes and keep monkey as pets, hence called Mankidias. The Saharas collect fire wood, herbal plants, roots, fruits, leaves, gums, resin and flowers and sell those in the local market to earn living. (Mishra & Bose'76).

Similipal Biosphere

After prolong deleberation and sincere efforts over the years, Similipal was declared as Biosphere, a concept of bigger protected area, on 22nd June 1992 by Government. The Biosphere is an international concept conceived by UNESCO and aims at conserving samples of ecosystems with genetic diversity for promotion of research and to ensure management of living resources, imparing knowledge for sustainable development and to promote international relation. The Man and Biosphere Committee examined and considered the following requisites to approve Similipal to function as Biosphere.

1. Presence of genetic diversity and potential for conservation of ecosystem in its totality.

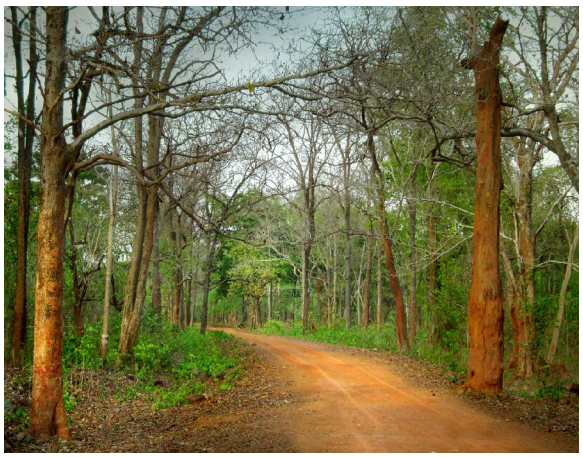
2. Effectiveness as conservation unit - availability of legal protection, freedom from human interference.

3. Representativeness.

4. Naturalness (least modified by man).

5. Importance - Unique richness in genetic resources; areas which need immediate attention due to continuing threat to species contained therein; preservation of accumulated knowledge by specific ethnic groups.

The level of management and management objectives of the biosphere shall be like other protected areas under the Wildlife (Protection) Act 1972, till it is covered under the Act. Unlike other protective areas, Biosphere is comprised



of three distinct zones namely - (a) core, (b) buffer and (c) manipulation / transition Zones, all with demarcated boundaries. These zones are set aside for specific function, such as : Core - the sacrosant area - fully protected. The Buffer - for research, environmental education and training, tourisim and recreation. The Transition zone should have research facility, sustainable eco-development and peoples participation, silvicultural operation, management of settlements etc.

The Similipal hillmass has status of 'Protected Area' since last four decades with well demarcated lines of Core and Buffer Zones of the Tiger Project (National Park & Sanctuary). For effective protection V.H.F. links are provided all over the massif. This helps in communicating information to check illegal entry for poaching or tree felling, thereby facilitating the project staff to take early action. Immediate attention on continuing threat of illicit felling, poaching, hunting and encroachment is needed. This instant problem can be met by deploying well trained protective personnels and motivators for interaction with the people in and around the biosphere limit. As the concept of protection of Biosphere is different from national park / sanctuaries, peoples' participation in protection is most essential as the area of 2750 sq.kms of Similipal Hill Reserve has legal protection by Forest Acts. The people of the core villages need to be taken out of the core early.

Fauna and its Natural Habitat

Animals guided by instinct, are territorial in habit, inhabit different altitudes of forest types having different kinds of habitat which sustain floras as under :

Dense Wood Land : It accomodates defused Sambar (Cervus unicolor), Kutra (Muntiacus Muntjack), wild boar (Sus scrofa cristatus), gaur (Bos gaurus), elephant (Elephas maximus), gurandi (Tragulus memina).

Open Wood Land : Though defused, but denser in this habitat, animals met are - Sambar, cheetal (Axix axis), kutra, wild boar, porcupine (Hystrix indica), refus tailed hare (Lepus nilgricollies) and along the long valleys to south, four-horned antelope (Tetraceros quadricornis), elephants are found in more nocturnal occupancy of these areas. Sloth bear (Melursus ursinus), hyena (Hyaena hyaena), ratel (Mellivora capensis) and the Indian pangolin (Manis crassicaudata) are also found here.

The Srubs : - These are diurnal grazing ground of Sambars. Wild boar is also found here during day time lying on grass.

Open Ground and Field : - This type covers the annual frost bitten grass lands of extensive patches bordering the woodlands, grass lands on nala and stream banks. Grass lands above 1000 meter and higher valleys are most suitable for all the gregarious successional species of deer and antilopes. Cheetal in small groups found near villages like Bakua, Garh-Similipal, Barheipani, Nawana and Chahala. Repeated tribal hunt and poaching have cleaned off the Cheetal from the area which had high density of the spp. earlier over the area. Four-horned antelope is found in

the grassy openings. Sambar and Kutura make use of the fringe at night. Elephant occasionally visits. Hares and porcupines are found here in high density. This is a good habitat for Wild Buffalo (Bubalus bubalis). Black buck (Antilope cervicapra) and blue bull (Boselaphus tragocamelus) are to be transplanted as are absent in the national park.

In general over lap on the terrestrial formation types are found in the primates like Rhesus macaque (Macaca mulatta) and the common langur (Presbytis entellus). The Indian pangolin (Manis crassicaudata) is dispersed in pockets all over the hills. The Indian giant squirrel (Ratufa indica) is found all over. The common giant flying squirrel (Petanrista petanrista) is also found in some areas.

Avifauna - Similipal has varied avifauna of peninsular and also of Himalayan region. The peafowl (Pavocristatus), red jungle fowl (Gallus gallus), red spurfowl (Galloperdix spadicea), painted spurfowl (G. iunulata) the black patridge (France linua francolinus), grey patridge (F. pondicerianus) and quails of all types. The famous mimic bird, Hill Mayna (Gracula religiosa) is plentiful.

Similipal forest covers and terrain and ideal habitat for tiger (Panthara tigris) and panther (P. paradus) with ample prey animals. This area is well dispersed having good ambush cover and is the ideal abode of big cats as stated earlier with dens over the area. Some dens are in use now.

Hyena (Hyeana hyeana) - are found in all the terrestrial types.

Wild Dogs occur in small groups.

Reptiles - the species met are - Python (Python molurus), Ring Cobra (Bungarus faciatus), Cobra (naja naja), Rat snake (Ptyas mucosus), Common Krait (Bungarus caerules), Russel's viper (Vipera russelli) etc.

Mugger (Crocodilus plugtris) is found in Khairi and Budhabalang rivers. (Chaudhury-'74)

Fish : A special type fish called *'Trout'* locally called *Khajara*, is found only in the rivers namely - Deo, Khairi and Bhandan of Similipal Hill Reserve. It is tasty but can not be kept long after catch as it gets decomposed soon.

Conclusion

There is one distasteful aspect that this developmental process has its appelling arrogance both towards nature as well as traditional culture. The main point is to be considered here is to find out the means of integral yoga of economic advancement together with environmental protection. With the development of civilisation, Justice as social goal has been fundamentally recognised.

To-day's society's interaction with nature is so intensive that the environmental question has

assumed proportions, affecting all humanity. Industrialisation, urbanisation, depletion of traditional resources of energy and raw-materials, the disruption of natural ecological balances, the species for economic reasons and sometimes for no good reason at all are factors which have contributed to the environmental deterioration. While the scientific and technological progress of man has invested him with immense power over nature, it has also resulted in the unthinking use of the power, encroaching endlessly on nature. If man is able to transform desert into oasis, he is also leaving behind the deserts in place of oasis.

What is needed is the general awareness and social consciousness to consider the problem at once. Environmental literacy on the part of the general masses is an imperative. This is the goal of to-day. Development is good, but it should not be at the cost of ravishing our natural resources. When water is pollutated air is obnoxious, food stuff are poisoned, what is the use of economic prosperity.

When every thing was in disarry, the shrinking of the forest cover in Similipal was in an increasing pace making its rare ecosystem in jeopardy. With the unfatigued effort of more than forty years, with sufficient caution and foresights various Governmental organisations like - Project Tiger, National Park, S.F.D.C. Ltd. and the concerned Forest Department have jointly undertaken the rescue operation and revival of the disturbed links of the ecology by ensuring effect protection. The timely declaration of the Biosphere Reserve comes as a harbinger of blessed hope. It is attributed to the nature's bounty a water-shed mark in the centuries old history of Similipal. History says the reality and the reality is always a shadeless sow. Can we save it; the onous is upon us, it needs a solemn pledge - "Live and Let Live".

References :

Senapati N. & Sahu. N.K., 1967, Orissa District Gazetteers *Mayurbhanj*, Orissa Government Press, Cuttack.

Champion H.G. & Seth. S.K., 1968, General Silviculture for India, Government of India, Publication Branch, Department of Printing & Stationary, Delhi-6.

Stracey, P.D., 1963, Wildlife in India, its Conservation and Control, Ministry of Food and Agriculture, Department of Agriculture, Government of India, New Delhi.

Mishra.R., 1973-74, Revised Working Plan of Karanjia Division, FFAH Department, Government of Orissa, Bhubaneswar.

Bose. S., 1973-74, Revised Working Plan of Baripada Division, FFAH Dept. Government of Orissa.

Kanungo. B.C., 1975, Conserve Similipal in its Wilderness, Orissa Environment Society, 1975.

Choudhury. S.R., 1974, Management Plan of Similipal Tiger Reserve.

Sri Samarendu Das and Sri Balabhadra Prasad Das are living at Surya Vihar, Link Road, Cuttack and Sri B.P. Das is the Ex-DFO-cum-Wild Life Warden, Karanjia Division.