



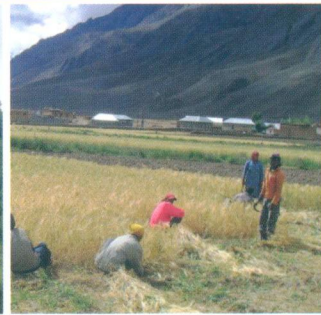
सत्यमेव जयते



United Nations
Educational, Scientific and
Cultural Organization

Compendium on Indian Biosphere Reserves

Progression During two Decades of Conservation



G.B.Pant Institute of Himalayan
Environment & Development



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Ministry of Environment and Forests,
Government of India

15

Achanakmar - Amarkantak Biosphere Reserve - Central Highlands, India

15.1. Introduction

The Achanakmar-Amarkantak Biosphere Reserve was notified by Government of India on 30 March 2005 as the 14th Biosphere Reserve in India. The reserve spreads from Maikal hill ranges to the junction of Vindhyan and Satpura hill ranges forming a triangular shape in Chhattisgarh and Madhya Pradesh states of Indian Union.

Designation Date	: 30 March 2005
Total Area	: 3,835.51 km ²
Core Area	: 551.55 km ²
Buffer Area	: 1,955.87 km ²
Transition Area	: 1,328.09 km ²
Extent	: 21°15' and 22°58' N 81°25' and 82°5' E

15.2. Area Description

This BR lies between the parallels of latitude 21°15' to 22°58' North and longitude 81°25' and 82° 5' East. It falls

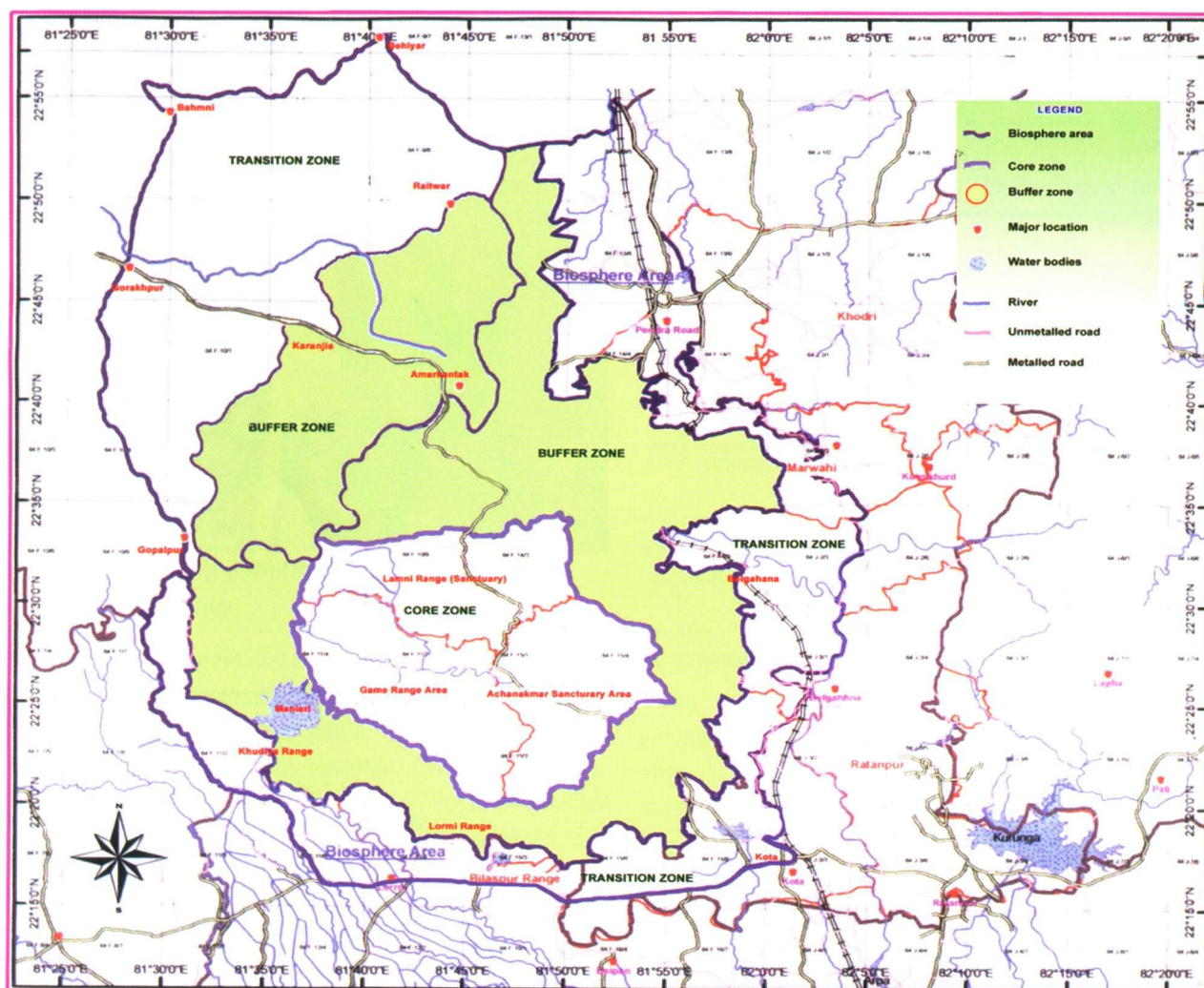


Figure 15.1: Location and Zonation of BR



in Malayan realm, Tropical Dry or Deciduous Forest Biome and Deccan Peninsula bio-geographic zone of the country. Its total geographical area is 3835.51 km². The core zone, which falls in Bilaspur district of Chhattisgarh state, is dense forest with terrains of hills and valleys and spread over an area of 551.55 km². Being a Wildlife Sanctuary it is protected to conserve its richness of flora and fauna. Of the total buffer and transition area, 2058.98 km² falls in Bilaspur district of Chhattisgarh state and 1224.94 km² in Dindori and Anuppur districts of Madhya Pradesh state (Figure 15.1). The topography varies from plain rice fields of Bilaspur and Anuppur districts and wheat fields of Dindori district to the hills of Maikal range of Satpura. The BR is well connected by road from Bilaspur and Raipur of Chhattisgarh and Anuppur and Shahdol of Madhya Pradesh.

The drainage system of the reserve consists of three major rivers originating from the buffer zone, viz. the Narmada River flowing towards West of its origin; the Johilla and the Sone rivers flowing towards North of the BR. A water check dam viz. Khudia dam situated in the Maniari River towards south-west of the reserve. Many streams and seasonal rivers fulfil the needs of inhabitants and wildlife. The area has many seasonal streams and rivers which help to restore the sustainability of various flora and fauna existing in different zones.

15.3. Background Information

15.3.1. Land use history

The current core area of Achanakmar-Amarkantak BR was declared as a Reserve Forest in 1878 by notification No. 5037 dated 7th Dec. 1878 under Section 34 of the Indian Forest Act VII. Later on, it was given under the Zamindari system to Pendra Zamindar (Landowner). In 1912, Government of India advised the Zamindar to introduce the fire protection measures and removal of climbers and regularisation of Nistar, but he failed to follow the instructions. The area was cut and burnt and system of shifting cultivation, locally known as 'podu' or 'bewar', was practised by the baiga and other tribal inhabitants especially on the steep slopes of Maikal range. Under this practice, the sal forests were cleared and cultivated for 2-3 years by tribal and then abandoned following shifting to another area. This practice had long

lasting effect on vegetation cover or composition giving rise to mixed species with poor regeneration. Later on, a working scheme was introduced by Government in the area to preserve the forest cover and improve its depletion. The practice was then restricted to a limited area.

In 1928, Mr. C.M. Wilfer prepared a working plan of Pendra Zamindari. In the initial years Pendra Zamindar followed some of the prescriptions and a large number of irregular felling of tree were done through contractors led to heavy irregular over exploitation. This tradition of felling was continued up to 1951. To check the deterioration, Government decided to take over the management of these forests by abolition of proprietary rights in the state, and transferring them to the forest department vide notification no. 28 of CR/299 XII dated 07-05-51. After abolishing the proprietary rights, the Government of Madhya Pradesh declared it as Protected Forest under adhoc notification No. 233-X and 9-X-59 dated 9-3-1957 and 10-7-1958 respectively. Minor alteration of afforestation and deforestation occurred in later years. The forests of the reserve were notified under section 241 of the Madhya Pradesh Land Revenue code 1959 vide Govt. of M.P. notification no. 7102/6006/VII dated 27-12-63 and no. 7/06/7-C/2 dated 03-09-64. These were the special significance for the protection and control of the Government forests in the tract. The area was surveyed some times during 1955 to 1963. Considering sufficient number of wildlife, the M.P. Government under the provision of section 66(4) of the wildlife protection Act 1972 declared the area as Achanakmar Game Sanctuary vide notification no. 2649-966-10-2-75 dated 28th June 1975. Subsequently, the Government of M.P. declared the present core area of the BR as reserve forest under Indian Forest Act Sec 34 vide notification no. 5037 dated 07/12/1978. After enforcement of Wildlife Protection Act, all the forestry works including collection of NTFPs were stopped by Government. However, to improve the degraded compartments a few teak plantations were done between the years 1952 to 1978.

15.3.2. Inhabitants

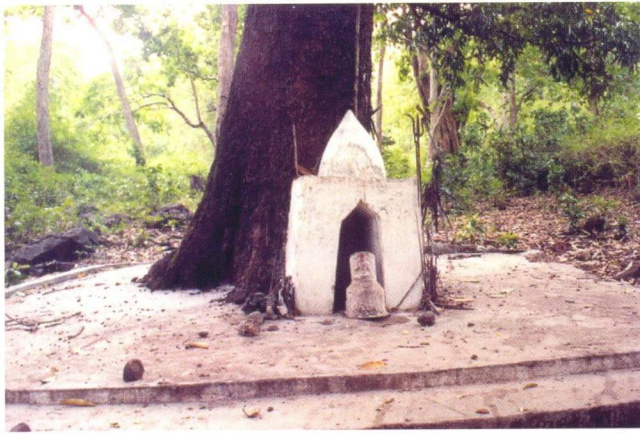
Nearly 7,617 traditional primitive tribal inhabitants, as per the population census of the year 2001, are settled in 22 villages of the core zone. The buffer and transition zones



Among tribes, residing in BR, notable are Baiga, Gond, Kol, Kanwar, Pradhan and Panka. The baigas are primitive Dravidian tribe. They are the most ancient, remarkable and delightful oldest tribe of India. They migrated from eastern Satpura hills and settled in Bilaspur district of the reserve. They use to avoid tilling and ploughing due to their rituals and beliefs. Presently, the baigas are dominant in population and ranked on the top among the other tribal communities in the BR. They are settled in maximum numbers at Mahamai followed by Chhapparwa, Jalda, Lamni, Rajak and Surhi. They get fuel, fodder, edible roots and tubers from forest besides cultivating some seasonal agricultural crops in small areas. Mahamai village has two hamlets namely Babutola and Ghameri where 13 and 45 families are living from last 10 to 15 years. Baiga is an endogamous group. The population of baiga is increasing due to the high birth rate and immigration from other parts of the state. Now, some of them have come forward and changed their primitive lifestyle. Gonds also have their origin from Dravid culture. Gond of core area is known by Pathare Gond and Singraulia Gond based on their place of migration. Their economy is largely dependent on agricultural labour. Kols migrated to Madhya Pradesh and Chattishgarh from Singhbhum district of Jharkhand province. In the present boundaries of the BR, they are settled at Achanakmar, Bindawal, Bamhani, Chhapparwa, Jakadbandha and Lamni. Kanwar refers to their origin to Mahabharata times. They constitute two types of family, i.e. single and joint family. Majority of them, live as single family. Oraons are also Dravidians tribe migrated from Chotta Nagpur. Some of them have come from Sarguja district and settled in BR in early eighties. They are mobile/ traveller community with a tradition of ready acceptance of innovations. Oraons are now settled in Surhi, Jakadbandha, Daganiya, Mahamai (core zone) and Jamunahi, Ghameri and Babutola (transition zone). Besides this, traders have also

of BR comprises of 399 villages and sub urban areas with a population of 4,40,404 persons. Major residential areas or settlements namely Kota, Khondri, Dindori, Amarkantak, Pendra road, Karanjiya, Gorakhpur, Lormi, Akhrar, Rajendragram and some revenue and forest villages like Jagatpur, Kabir, Rajki, Boirha and Sarasdol exist in buffer and transition zones. All together, there are 27 communities living in different zones of the BR. These include Baiga, Gond, Dhanwar, Kol, Kanwar, oraon, Chamar, Sais (Sarathi), Basore, Lonia, Muslim, Sindhi, Brahmin, Rajput, Goswami, Baraith, Kalar, kumhar, Kewat, Nai, Ahir (Raut), Panika, Sondhiya, Lohar, Maratha, Sonar and Baniya, etc.





migrated from nearby areas. They are now settled in some sub urban localities like Kota, Gorakhpur, Amarkantak.

15.3.3. Cultural heritage

The sub urban township Amarkantak, situated in the buffer zone of the BR, is of great cultural and religious significance for Hindus, Jains and Sikhs. It is the origin place of the holy Narmada, the Sone and the Johilla rivers. It is said that Adi Sankaracharya, who was born in 788 AD, consecrated on the bank of the river Narmada at Amarkantak. He laid foundation of Pataleshwar Mahadev at the origin of river Narmada. This place was later named as Surajkund. Kalchuri Maharaja Karna Dev (1042-1072 AD) constructed temple at Surajkund. An open pool has been constructed at the origin of the Narmada river, which is known as Narmadakund. A number of temples such as Narmada temple, Shiva temple, Shri Shuryanarayan temple, Durga temple, etc., surround the Narmadakund. The ancient temples of Kalchuri period, Machhendranath and Pataleshwar are excellent examples of architecture. It is said that Gods, Gandharvas, Asuras (demons), saints and sages achieved their spiritual powers at Amarkantak. Kapil Muni, Bhrigu Rishi and Markandeya Rishi are believed to had their ashrams here. Devotees from different states, throughout the year, visit these temples and ashrams.

15.3.4. Landscape features that attract visitors

Amarkantak plateau, Lamni and Achanakmar forest ranges, many permanent and seasonal waterfalls like Durgadhara, Shambhudhara, Kapildhara, Mendri Sarai fall and water reservoirs like Sinhwal-sagar lake provide aesthetic value to the area and have scenic spots. The cool, calm, dense sal forest with a variety of wild fauna, also attract the tourists. A number of tourists visit the core and buffer zones of BR for enjoying its wilderness and wildlife. The trend of number of tourists visiting Achanakmar and Lamni has continuously increased in the recent years. Students from nearby universities, researchers from various research organisations



The forest types found in the BR are: Northern Indian Tropical Moist Deciduous Forests, Northern Indian Moist Deciduous Forests and Northern Tropical Dry Deciduous Forests and their subtypes.

of the country often come for various studies related to floral and faunal taxonomy, ecology, animal behaviour, etc.

15.4. Special Features

The reserve area forms a part of the Satpura and Vindhyaachal mountain series with valleys in between. It separates the planes of northern India and the Indian peninsula. The vegetation or forest types and subtypes met in the reserve are: Northern Indian Tropical Moist Deciduous Forests, subtype Northern Indian Moist Deciduous Forests consisting of Moist Peninsular sal forest-moist high level sal forest, moist low level sal forest, moist valley sal forest and Northern Indian Moist Deciduous Forests sub-type Moist Mixed Deciduous Forests Northern Tropical Dry Deciduous Forests subtypes Dry Peninsular sal Forests and Northern Dry Mixed Deciduous Forests. The present BR encompasses a variety of ecosystem like sal forest, mixed forest, degraded





forest and agro-forestry ecosystems. The various floral and faunal species have evolved due to geographical barriers, likewise various micro and macro ecosystems have evolved or undergoing evolution, following hydrological and mineral cycling, climate change, etc. There are many other important aspects, where serious research efforts can unfold the global importance of the area in the interest of mankind.

The tribal communities living in most of the villages near water sources of the BR have small families. They are partially dependant on forest for food, and fully dependant for fodder and fuel, besides farming in small forest land. They work as labourers and often engaged by the reserve managers for various habitat improvement activities. They also move in forest to collect honey, lac, silk cocoon, mushroom, rhizomes of *Dioscorea*, flowers of mahua (*Madhuca indica*), fruits of chironji (*Buchnanian lanzan*), custard apple, mango, aonla (*Emblica officinalis*), imli (*Tamarindus indicus*), etc., in a sustainable manner for their day to day use and marketing of the surplus in the weekly tribal market for cash income. The inhabitants of thickly populated villages have constituted forest protection committees, eco- development committees and village panchayats, which help them in their socio-economic development.

The inhabitants are, however, allowed to collect NTFPs for their domestic needs besides being cultivating some crops around their settlement area. Similar benefits are provided to the inhabitants of buffer and transition zones of the BR. They are allowed to collect NTFPs on sustainable manner and sell their collected material to Chhattisgarh MFP Co-operative Federation Ltd and M.P. State MFP Federation Ltd. Meetings and workshops are often arranged to discuss on the research priorities of the reserve and inhabitants residing therein. In general, following priorities have been identified:

- ❖ Identification of factors that lead to habitat and environmental degradation and their ecological rehabilitation.

- ❖ Taxonomical identification of various species of flora, their population status, type of threats to them and their qualitative assessment.
- ❖ Sustainable use of natural resources, in-situ and ex-situ conservation of rare, endemic and threatened species to prevent them from extinction.
- ❖ Identification of appropriate technology for conservation and evaluation of environmental efficiency and steps for protection of fragile and vulnerable ecosystem.
- ❖ Basic needs of the rural population in BR are the improved agricultural and horticultural practices including improved varieties, fodder, etc., education and training to improve socio-economic status of inhabitants. Water conservation techniques by encouraging construction of small stop dams in buffer zone, harvesting and utilization of rainwater, etc.
- ❖ Exploration of alternative means of livelihood and income generation by motivating tribal on latest techniques of silk, lac, honey extraction, eco-tourism, etc.

15.5. Biodiversity Values

15.5.1. Flora and Fauna

The reserve is very rich in biodiversity components and comprises of 1498 species of identified flora, 327 species of identified fauna and many more un-described floral and faunal taxa. Plant species like the lichen *Caloplaca amarkantakana* (Fam: Teloschistaceae), fern *Isoetes bilaspurensis* (Fam: Isoetaceae) and an angiosperm *Bothrichloa grahamii* (Fam: Poaceae) are endemic to this region. Thirty five threatened species of flora and 55 threatened species of fauna belonging to various groups have been identified and assigned different threat categories regionally as well as globally following IUCN criteria.

The pteridophyte, like, *Ceratopteris thalictroides* (syn. *Acrostichum thalictroides*), *Cheilanthes rufa* (syn. *Aleuritopteris rufa*), *Dryoathyrium boryanum* (syn. *Aspidium boryanum*, *Lastrea boryana*, *Phegopteris kingie*), *Marginaria macrocarpa*, *Microsorium membranaceum* (syn. *Polypodium membranaceum*, *Pleopeltis membranaceum*), *Polystichum auriculatum* (syn. *P. harpophyllum*), *Pteris quadriaurita* have been reported since 1970. Species of ferns like *Adiantum capillus veneris* and *Lygodium flexuosum* are endangered. Among angiosperms, *Rauvolfia serpentina* is critically endangered whereas *Clerodendrum serratum*, *Acorus calamus*, and *Eulophia herbacea* are endangered locally as well as at regional level. Remaining 22 species are vulnerable. Among fauna, there are 2 critically endangered species, viz. *Philautus sanctisilvaticus* (Amphibia: Hylidae),

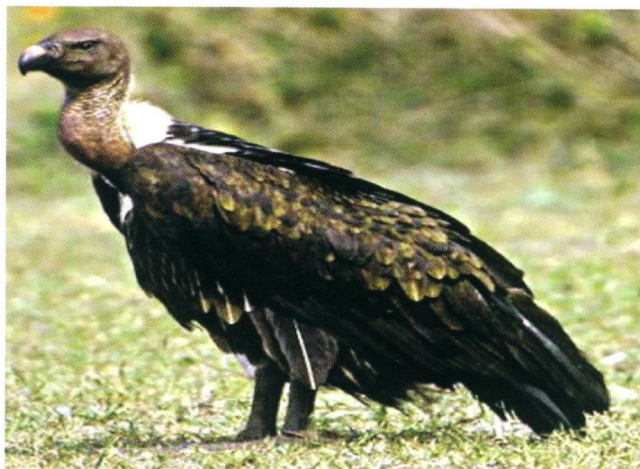
Recorded bio-diversity of the reserve

Flora

Angiosperms	- 1111
Gymnosperms	- 16
Pteridophytes	- 40
Bryophytes	- 16
Lichens	- 130
Fungi	- 178
Algae	- 7

Fauna

Mammals	- 27
Birds	- 142
Lizards & Snakes	- 15
Amphibians	- 10
Pisces	- 16
Beetles & Cricket	- 27
Butterflies & Moth	- 85
Centipedes	- 5

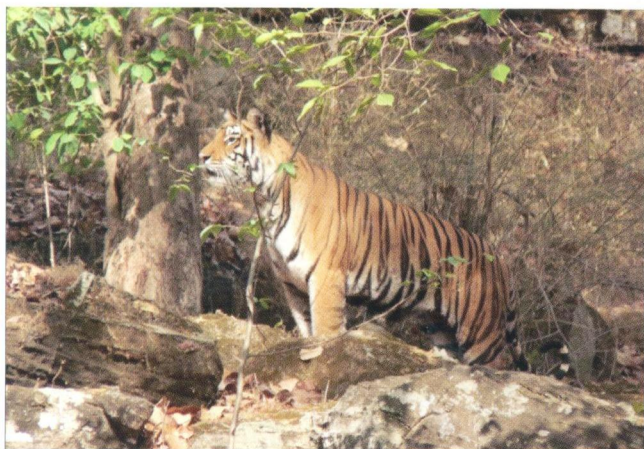


past and studies on some of them are in progress.

15.6. Issues and Concerns

15.6.1. Higher dependency of inhabitants on BR

Almost all the families living in villages have cattle, which are fully dependant on the reserve for grazing. The villages are also dependant on BR for firewood and NTFPs. About 8233 tonnes of 47 items of NTFPs with a total value of more than 2.70 crores are collected by local tribals from Amarkantak plateau. The income realized through the sale of NTFPs is reported from Rs. 28,234 to Rs. 28,325 thousand per annum.



Gyps bengalensis (Aves: Accipitridae) and 2 endangered fauna, viz. *Notopterus chitala* (Pisces: Notopteridae), *Panthera tigris* (Mammalia: Felidae). Besides, 51 low risk to vulnerable species as per IUCN categorization have been reported. The reserve is a known habitat for animals like tiger, bison, bear, spotted deer, barking deer, wild cat, fox, wild dog, sambhar, four horned antelope, mouse deer, etc. It has rugged terrain as well as grasslands giving shelter to wildlife in all seasons. Rich dense forests dominated by sal and its associates give way to high precipitation further enhancing and promoting moist habitat and supported plant diversity. Besides this, there are 518 floral species of food and medicinal values. Seven of them are pteridophytes whereas remaining 511 species are flowering plants. Investigations on sustainable harvesting of many species was done during



15.6.2. Man animal conflicts

The conflict making animals in Achanakmar- Amarkantak are the snakes, small mammals like wild boar, large carnivores like leopard, tiger, sloth bear, etc. Marwahi Forest Division of the BR is well known for human-sloth bear conflict. The maximum incidences due to mauling are reported to be caused by sloth bear followed by jackals, leopards, hyena, wild boar and bison. The reason is probably due to degradation of forest areas, fragmented and interspersed agricultural fields. Restoration of sloth bear habitat in degraded areas may help to check the conflict between sloth bear, leopards, etc. and human inhabitants in the BR.

15.6.3. Fire protection

Frequent fire is a major problem in some areas where inhabitants burn the ground debris in March-April to facilitate collection of Mahua flowers and getting better quality of tendu leaves. It destroys the regenerating saplings and season's seedlings besides wiping out the ground flora. Forest Protection Committees have been constituted in fire prone areas to prevent the ground flora. Some efforts are to be done to prevent fire in the BR.

15.6.4. Illegal poaching and harvesting

In spite of strict vigilance, illegal poaching activities in the BR are not uncommon. Similarly, illegal felling and harvesting of NTFP is also reported. The forest protection committees have been constituted by BR managers in villages to prevent the illegal activities. They are also strictly vigilant and check gates are operating at the approachable roads.

15.7. Perspective 5 year Plan

The effective Management is a way that ensures community participation in conservation and utilization of the resources in a sustainable manner as well as evolves new means to secure economic well-beings of community. The 1st perspective 5 year plan of the BR was prepared during the year 2005 soon after its notification as the 14th Biosphere Reserve of the country. Various developmental activities for 5 years (2005-06 to 2009-10) were planned and discussed in State Level Steering Committee. The plan for Rs. 797.92 lac was approved and submitted to Government of India, Ministry of Environment & Forests, New Delhi, which sanctioned a sum of Rs. 126.82 lac to initiate the work as per the plan. The activities of the plan are as follows:

15.7.1. Conservation

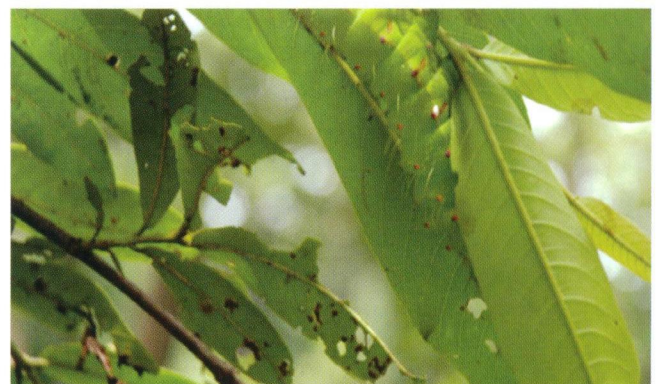
- ❖ Habitat Improvement by Soil & moisture conservation through construction of check dams, retaining wall

landscape zone, Grass meadow development & plantation, Rehabilitation of degraded bamboo forests.

- ❖ *In-situ* and *ex-situ* conservation of plant species
- ❖ Monitoring of Biodiversity change in selected areas.
- ❖ Conservation of indigenous species of fruit plants and Minor Forest Produce.

15.7.2. Eco-development and livelihood security

- ❖ Sanitation by construction of toilets in semi-urban centres, Development of infra-structure like Patrolling camps, forest roads, etc.
- ❖ Eco-development of revenue areas by digging wells, etc., Promotion of fuel wood/ fodder species and intensive planting in Private Community lands.



- ❖ Promotion of non-conventional energy by providing LPG connection in school and semi-urban areas and distribution of solar lamps.
- ❖ Promotion of activities for increasing crop production and manure by construction of Irrigation check dams, field channels, promotion of biogas and vermicompost.
- ❖ Promotion of mushroom cultivation, lac cultivation pruning, supply of Tussar reeling Charkha, collection of honey, collection and processing of Mahul leaves, promotion of biodiesel plants.

15.7.3. Capacity building and awareness generation

- ❖ Conservation of ancient places and Natural Heritage sites, Religious tourism and management of solid waste.
- ❖ Awareness campaign by development of Interpretation Centre, Nature trails and Trekking routes and promotion of tourist facilities.
- ❖ Establishment of Herbarium & interpretation of local flora.
- ❖ Training-cum-workshop for implementing agencies.
- ❖ Organization of nature camp for school children.
- ❖ Organizing of Jaiv Mandal Yatra.
- ❖ Installation of publicity sign boards, publication, purchase of books, video film, posters, brochures, etc.
- ❖ Skill Development.

15.7.4. Management studies

- ❖ Short term feasibility studies like Environment Management Plan for BR and its surrounding areas using GIS technique, Ensuring fodder availability at 4 selected localities, and study of Change in socio-economic status based on census from 1991 to 2001.

15.7.5. Implementation strategy

On the basis of approved annual action plan, the priority activities are decided every year in the meetings of State Level Steering Committee. Accordingly, the fund is allocated by Government of India, Ministry of Environment & Forests for infra structure development, habitat improvement, village development, socio-economic upliftment, development of communication, ecotourism, *in-situ* and *ex-situ* conservation of plant species, promotion of non-conventional energy, promotion of activities for increasing crop production, manure production and, social welfare activities, etc., to State Government, who releases the fund to the BR management for implementing the various activities. Besides this, other agencies like Sericulture and Khadi

Gramodyog department (Government of India) is also providing trainings to the inhabitants of transition zone of BR and supports them financially and technologically in wild silk production. Universities, Research Organisations and Non-Government Organisations are also financed by the Government of India as well as by the State Governments for taxonomical identification of various flora and fauna, and to increase the socio-economic status of inhabitants by maintaining their symbiotic and sustainable livelihood. The Tribal Welfare department also takes care of inhabitants by way of contributing for their education and health.

15.8. Benefits, Constraints and Opportunities

The topography, soil and climate of the reserve favour luxuriant growth of the flora. Protection provided to the flora and fauna helps in preserving the gene pool of various endemic and rare species of the region. The average annual rainfall of the BR varies from 1322 mm to 1624 mm. There are many seasonal monsoon dependent and permanent streams, rivers like the Narmada, the Johilla and the Sone. But, the watershed management schemes are poorly developed. Only two check dams viz. Khudia dam on Maniary river and Sinhwal sagar lake are available to cater to the needs of various fauna of the BR during the dry season. Therefore, a few more stop dams need to be constructed to retain the water in at least core and buffer zones, so that, the movement of the wild animals could be restricted up to the core zone and the conflict between wild animals and man are minimised. Frequent movement of heavy vehicles during day hours as well as human settlements disturb the wild animals. Discouraging movement of heavy vehicles and new settlements in core zone can improve the present situation. Efforts to motivate inhabitants of two villages to shift from core zone to transition zone will have the fruitful results. There are many opportunities to develop the ecotourism in the BR. Tourist huts and rest houses at Lamni, Chhaparwa and Achanakmar are available for stay and early morning visits to witness the wildlife and site seeing. Development of herbarium, interpretation centre at Achanakmar may attract more visitors to the Achanakmar- Amarakantak BR.

15.9. Success Stories

15.9.1. Successful initiatives for sustainable NTFP collection

- ❖ Earlier nearby traders of medicinal plants and other NTFPs used to purchase the raw material from the local poor tribal people at very nominal rates and to earn more, the tribal would over-exploit the raw material from the forest. Towards addressing this issue,

the State Forest Department of Chhattisgarh and Madhya Pradesh constituted Minor Forest Produce Co-operative Federations, which started helping the inhabitants technically in collection and then arranging the market for the harvested raw material. As a result currently various forest produces such as, Lac, honey, mahul leaves and many species of medicinal plants are collected by the inhabitants in sustainable manner from different ranges of the BR.

- ❖ In some ranges of the BR, forest protection committees or Van Surakshya Samiti have been constituted by the villagers. The members of these committees rear the silkworm on naturally occurring small bushes and trees of *Terminalia arjuna* and *T. tomentosa*. The cocoons developed from these worms are sold to Seed Multiplication and Training Centre, Central Silk Board, Bilaspur or even to local traders. The yield is taken in July- August and October – November and the income earned is Rs. 15375 to 46059 per year during 2005-06 and 23006-07. The silkworm cocoon production has helped in reducing the migration of villagers to nearby

towns in search of jobs. It has also checked felling and lopping of trees in the areas where the silkworm breeds naturally on its hosts.

15.9.2. Systematic documentation and dissemination of information on BR

- ❖ Systematic documentation of flora, fauna and their dissemination to users, including BR managers, scientists and academicians have helped them in further identification of priority areas for further study and management intervention.

15.9.3. Successful protection of core area

- ❖ Various conservation and development activities in the buffer and transition zones have provided sufficient natural resources, which have helped in minimising the people's pressure on the core area.

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The Ministry of Environment & Forests (MoEF)

The Ministry of Environment & Forests (MoEF) is the nodal agency in the administrative structure of the Central Government for the planning, promotion, co-ordination and overseeing the implementation of India's environmental and forestry policies and programmes.

The primary concerns of the Ministry are implementation of policies and programmes relating to conservation of the country's natural resources including its lakes and rivers, its biodiversity, forests and wildlife, ensuring the welfare of animals, and the prevention and abatement of pollution. While implementing these policies and programmes, the Ministry is guided by the principle of sustainable development and enhancement of human well-being. The broad objectives of the Ministry are: (i) Conservation and survey of flora, fauna, forests and wildlife; (ii) Prevention and control of pollution; (iii) Afforestation and regeneration of degraded areas; (iv) Protection of the environment; and (v) Ensuring the welfare of animals. [details <http://envfor.nic.in>].



G.B. Pant Institute of Himalayan Environment & Development

G.B. Pant Institute of Himalayan Environment and Development (GBPIHED) was established in 1988-89, during the birth centenary year of Bharat Ratna Pt. Govind Ballabh Pant, as an autonomous Institute of the Ministry of Environment and Forests (MoEF), Govt. of India. The Institute has been identified as a focal agency to advance scientific knowledge, to evolve integrated management strategies, demonstrate their efficacy for conservation of natural resources, and to ensure environmentally sound management in the entire Indian Himalayan Region (IHR). The Institute has headquarters at Kosi-Katarmal, Almora (Uttarakhand) and four regional units, namely, Himachal Unit at Mohal (Kullu, HP), Garhwal Unit at Srinagar (Garhwal, Uttarakhand), Sikkim Unit at Pangthang (Sikkim) and North East Unit at Itanagar (Arunachal Pradesh). [details <http://gbpihed.gov.in>].

