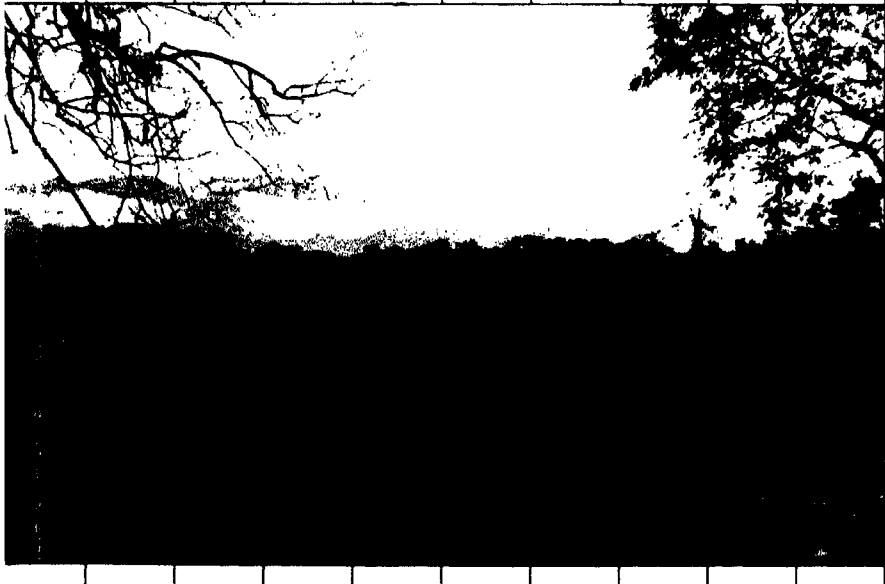
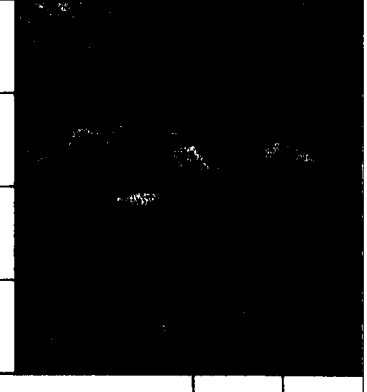
State Report on West Bengal Forest 1998-99





Statistical Cell
Office of the Principal Chief Conservator of Forests
West Bengal

STATE REPORT
ON
WEST BENGAL FOREST
1998-99

Planning and Statistical Cell
(Statistics)

Office of the
Principal Chief Conservator of Forests
West Bengal

WILDLIFE

There are at present 15 Wildlife Sanctuaries, 5 National Parks & 2 Tiger Reserves (overlapping with N.P. Sanctuaries) covering 34% of the recorded forest land (11879 Sq. Km.) of the State.

Census of wild animals

Periodic census of major wild animals like Tiger, Elephant, Rhino, Gaur and Deer/Antelopes are carried out in the State. During 1997, Tiger census was carried out all over the State and the total estimated Tiger population, as in 1997, is 361 as compared to the population of 335 during 1993 census. The estimated population of Elephant in North Bengal, as in November, 1996, is between 225 and 250. Census for Rhino was carried out in the state during April, 1998 and the total estimated population is 68* (Jaldapara – 49, Gorumara – 19) as compared to 45 in 1993.

Man-Animal Conflict

Such conflicts usually arise out of straying of wild animals into habitations and result into either killing of the wild animals, or, death / injury of human beings and loss of crop/ cattle.

Man-elephant and Man-tiger conflict, of late, have become more acute due to shrinkage of habitats, loss of fodder / prey base in the forests and increased activities around the forests. Rapid expansion of habitations, agriculture and tea gardens had not encroached upon the forests and grasslands, but also cut off the corridors needed for migration of wide-ranging animals like elephants. Moreover, wanton grazing of cattle in the forest fringes and other forests areas have created acute pressure on the fodder of the large herbivorous. Conversion of natural forests into value-added plantations of commercial species have further restructured the fodder base of the elephants and other wild animals. Poaching of deer and other smaller prey- animals have resulted into deduction in prey-base of being costs like tiger and leopard.

Elephants do often enter into tea garden and human habitations buying of their migration routes. Raiding of fringe-village by elephants for paddy-fodder and country – liquor is an accepted phenomenon. Intensive agriculture (multiple cropping) in the fields around the elephant habitats encourage the animals to stray out of the forests and raid he crop-fields for, perhaps, more tasty and more-nourishing food.

Leopards are normally concentrated in the forest fringe areas and tea-gardens as they look for prey like cattle, poultry birds etc. They prayer bushes for their littering. Bamboo-grasses, which once used to be favourate haunts of leopards of cub-laying purpose, have gradually been destroyed over the years, resulting into increased man-leopard encounters in the tea gardens.

To reduce such conflits, following measure are taken by Wildlife Wing, West Bengal:-

1) Erect power fencing around the N.P. / Sanctuary and forest boundaries adjoining villages prone to elephant depredation, to control movement of elephants.

2) Form voluntary Squads, with the help of Panchayets, tea garden labour unions and tea garden management, for systematic driving of elephants when they enter the habitations and labour colonies.

3) Encourage installation of solar panel lightings in the labour colonies where there is no electrification.

4) Discourage villagers and tea garden labourers from keeping country-made liquor in the houses.

5) Develop fodder and water sources inside the wildlife habitats.

6) Pay ex-gratia grant (relief) to the victims of crop-damage and in case of human casualty due to wildlife depredation.

7) Reintroduction of ungulate population in the P.As. to increase prey-base for the carnivorous.

8) Lay trap cages for capturing straying tigers / leopards.

9) Use tranquilizer guns to capture and relocate the wild animals (Bison, tiger, leopard, monkeys, langoors), entering habitations, into their natural habitats.

10) Carryout awareness campaign amongst the fringe villagers about the do's and don's to prevent wildlife depredation.

11) Involve Eco Development Committees in the management of the P.As. to reduce antipathy of fringe villagers towards wild animals.

Forest & wildlife Protection

The strategy for preservation of flora and fauna of the Protected Areas (P.A.) is five folds, namely, (i) developing infrastructures like establishment of camps and watchtowers for placement of staff in the valuable portions of the sanctuary to ensure round-the-clock vigil (ii) arming the protection staff with more effective weapons like 0.315 Rifles (in addition to the DBBL guns), (iii) establishment of R.T. communication network, connecting all remote areas of the sanctuary with central base stations and also connection amongst the central base stations, (iv) providing motor cycles, mobile vans and fast-moving LMV (Zeeps) for more entensive and faster patrolling all over the P.As., (v) Constituting human fencing around the P.As. through the Eco-Development Committees.

The R.T. Networks for the forest areas of the state have the frequencies in VHF Range. Approval of G.O.I. has also been obtained during 1995-96 for establishment of long-distance, H.F. R.T. network connecting Calcutta with the remote areas of the P.As. like Gorumara N.P., Sukna (Mahananda Wildlife Sanctuary), Hollong (Jaldapara Wildlife

Sanctuary), Rajabhatkawa (Buxa Tiger Reserve), Sajnekhali (Sunderban Tiger Reserve), Kankrajhor (Proposed Mayurjharna Elephant Reserve along Bengal-Bihar border), Bandowan (Purulia), Raiganj (Bird Sanctuary), Jaypur (Bankura District). This long distance, High Frequency RT Network has been commissioned from 97-98.

Wildlife – related offences

Major offences involving wildlife and wildlife products, in the State relates to smuggling of Rhino horn, tiger skins / bones / nails, elephant tusks, leopard skins, Gaur horns, Otter / monitor lizard / snake skins, Bear gall bladders, live birds / snakes / turtles, Butterflies & beetles etc. Major trading centres are Calcutta / Howrah / Siliguri and the important condints for smuggling across the international borders are Calcutta Port / Air port, Bagdogra Airport, Dhulabari and Pasupati along Nepal border, Phuntshilling along Bhutan border, Mahedipur and Bongaon along Bangladesh border. In a few recent incidences, one Japanese national was caught while smuggling butterflies from Darjeeling, and two Mauritius national were caught while trying to smuggle turtles (Kachuga tecta) across Bangladesh border. A few shawtoosh shawls were also recovered from a clandestine dealer in Calcutta.

Habitat Development

Fodder Development – One of the major constraints towards management of wild animals in our forests is the shortage of fodder. Management of the forests in the earlier decades of this century, with an eye to timber productivity, has led to limitations of foraging areas for the wild animals. However, during the last one decade or so, development of fodder plantation in the wildlife habitats has received topmost priority. Areas having monoculture of teak etc. in the P.As. are being systematically opened up through " Canopy opening" and "overwood removal" operations in order to encourage growth of fodder grasses in such areas. These are also followed up with cultivation of suitable (indigenous) fodder grasses, bamboo, fruit and fodder trees. Such fodder development activity in M.W.L.S. in recent times has helped develop the sanctuary as near-permanent habitat of nearly 50 or so wild elephants. Since the animals are spending longer time inside the P.As., the extent of damage in the adjoining villages & loss of human / animal lives has also been considerably reduced over the year.

Development of water-holes

A suitable habitat for wildlife should have not only a good cover (shelter) and abundant fodder, but also perennial source of water for drinking and wallowing of the wild animals. With this end in view, top priority is accorded to develop better water regime in the P.As., through construction of water-harvesting structures and water-holes. One such major effort in South Bengal is the series of rectangular weirs constructed along the jhoras in Kankrajore and Rainbandh forests in South Bengal. In Jaldapara W.L.S., a major work

has been taken up to partially inundate the extensive unproductive grassland ("Harindangar Char") by constructing a series of water-harvesting structures-an increase in soil-moisture in the area will help suppress the growth of obnoxious "lemon grass" and encourage regeneration of Typha, Arundo donax, Sacchrum spp. (fodder grasses) etc. The works of Jaldapara WLS and Gorumara N.P. have been started from 1995-96 and the soil conservation structures have already yielded encouraging results. Long stretches of shallow pools, thus formed, are also acting as wallow pools for the rhinos and elephants.

Chemical Capture method in Wildlife management

West Bengal is perhaps one of the very few states of the country which has mastered and perfected the art of "Chemical Capture technique for management of problem wildlife population". Over the last one decade, the trained personnel of Wildlife Wing.have used drugs like Immobilon, Xylazine and Ketamine, through 'Dartguns' and "Blow pipes", to sedate / immobilize either injured / sick or straying wild animals and have carried out successful treatment or translocation of the problem animals. The success rate has been very high and the "Chemical Capture" technique has helped save lives of a large no. of wild animals, specially elephant, tiger, leopard, rhino and gaur.

Eco-development activities around National Parks / Sanctuaries

As a follow up of the concept of Joint Forest Management in the Reserved and Protected forests of South Bengal and North Bengal, other than National Parks / Sanctuaries, Eco-development activities have been taken up all around the protected areas of North Bengal & Sunderbans. The objective is to conserve the floral and faunal biodiversity of the Protected Areas through direct involvement of the fringe population. The strategy is to carry out ecologically sustainable, economic development of fringe population so that the biotic pressure of the forests for subsistence of fringe population is considerably reduced.

Voluntary Institutions of Eco-Development Committees have been formed all around the National Parks/ Sanctuaries, in line with the Forests Protection Committees. A specific Govt. order on formation of EDC has already been issued and these EDCs are in the process of formal Constitution as per the Govt. resolution.

Eco-development activities in the fringe areas will include

1) Construction of Jampoi/ irrigation channels and dug wells to augment agricultural production.
2) Provision of input for improved agricultural practices, including technology transfer.
3) Mushroom cultivation including training.
4) Apiary including training.

5) Pisciculture including training.

6) Provision of support inputs like knitting-machine/stiching machine/ tools to encourage cottage/ home industry.

7) Improvement of road, connecting remote villages to market places.

8) Provision for drinking water and tubewells in the fringe villages.

9) Assistance for construction of community centres, school buildings.

10) Installation of solar lights in public places / village roads.

11) Input for development of alternate sources of energy like small scale hydro-power generators in the hills, smokeless chullahs, Biogas plants etc.

12) Input for cash-crop as insurance against wild animal damage.

13) Cattle improvement programme including fodder generation.

14) Inoculation of domestic cattle against diseases.

15) Piggery / poultry / duckery development.

16) Provide basic medical facilities.

Such eco-development activities had been initiated in the fringes of Protected Areas on a perceptible scale from 1992-93. The fund support is provided from various schemes like :-

1) State plan scheme of Economic Rehabilitation of fringe population.

2) Centrally Sponsored Scheme on Eco-development around National Park / Sanctuaries.

Forest area protected for Wildlife in West Bengal.

		Area in Sq. km	Notification No. & Date	Biogeographic Zone
	National Parks			
1.	Singhalila NP	78.60	9057-For dt.2.12.92	2C
2.	Neora Valley NP	88.00	9058-For dt. 2.12.92	2C
3.	Buxa NP	117.10	3403-For dt. 5.12.97	7B
4.	Gorumara NP	79.45	1-For dt. 1.1.98	7B
5.	Sundarban NP	1330.10	2867-For dt. 4.5.84	8B
	Sanctuaries:			
1.	Jorepokhri Salamander	0.04	1107-For dt. 11.03.85	2C
2.	Senchal WLS	38.88	2773-For dt. 19.8.98	2C
3.	Chapramari WLS	9.492	2774-For dt. 19.8.98	7B
4.	Mahananda WLS	158.04	2775-For dt. 19.8.98	7B
5.	Jaldapara WLS	216.51	2890-For dt. 27.8.98	7B
6.	Raiganj WLS	1.30	1901-For dt. 11.4.85 U/S 18(1) of WLP Act of '72	7B
7.	Bethuadahari WLS	0.6686	2772-For dt.19.8.98	7B
8.	Ballavpur WLS	2.021	4755-For dt. 11.7.77 U/S 18 (1) of WLP Act of '72	7B
9.	Ramnabagan WLS	0.14	4345-For dt. 30.9.81	7B
10.	Bibhutibhusan WLS	0.64	2776-For dt. 19.8.98	8B
11.	Narendrapur WLS	0.10	1543-For dt. 14.4.82 U/S (1) of WLP Act of '72	8B
12.	Sajnakhali WLS	362.40	5396-For dt. 24.6.76 U/S 18(1) WLP Act of '72	8B
13.	Halliday Island	5.95	5388-For dt. 24.6.76 FINAL U/S 18(1) of WLP Act of '72	8B
14.	Lothian Island	38.0	2771-For dt. 19.8.98	8B
15.	Buxa WLS	368.99		7B
		54.47	12-For dt. 1.1.91	
		314.52	316 For dt. 24.186	
		368.99	u/s 18(1) of WLP Act of '72	

Statement showing wildlife census figures of West Bengal

Name of animal	Year	Gorumara	Buxa	Jalda para	Maha nanda	Sunder bans	Other areas	Total
TIGER	1979	7	27	12	10	205	35	296
	1984	16	15	9	1	264	39	344
	1989	8	33	7	8	269	36	361
	1992	-	29	5	13	-	-	-
	1993	-	29	9	12	251	34	335
	1997	-	32	13	12	263	43	361
LEOPARD	1984	14	8	7	12	-	41	82
	1989	14	50	5	10	-	29	108
	1992	-	63	-	-	-	-	-
	1993	2	-	9	2	-	31	107
RHINO	1964	N.A.	-	72	-	-	-	*72
	1975	N.A.	-	23	-	-	-	*23
	1978	N.A.	-	19	-	-	-	*19
	1980	10	-	22	-	-	-	32
	1985	8	-	14	-	-	-	22
	1989	12	-	27	-	-	-	39
	1992	11	-	33	-	-	-	44
	1996	16	-	41	-	-	-	**57
	1998	19	-	49	-	-	-	**68
ELEPHANT	1989	-	-	-	-	-	-	175
	1992	-	-	-	-	-	-	186
	1996	-	-	-	-	-	-	225-250

* Excluding Gorumara population

** Includes 2 Rhinos brought from Assam and reintroduced in Gorumara & Jaldapara during October, 1995.

TIGER CENSUS 1997

DIVISION	Subadult Male	Adult Male	Subadult Female	Adult Female	Cub	Total
Buxa Tiger Reserve	11	2	12	6	1	32
Sunderban Tiger Reserve	52-54	45-47	41-43	91-99	27	256-270
South 24 - Parganas	3	10	3	16	5	37
Jaldapara Wildlife Sanctuary	2	3	-	6	2	13
Mahananda WLS.	2	4	2	3	1	12
Kalimpong Division	-	1	-	-	-	1
Baikunthapur Division	-	2	-	-	-	2
Kurseong Division	-	1	-	1	-	2
Darjeeling Division	-	1	-	-	-	1
TOTAL						361

TIGER CENSUS 1993 & 1997

	1993	1997
BTR	29	32
STR	251	263
24 Parganas	26	35
Jaldapara	9	13
Mahananda	12	12
Other Forests Divn.	8	6
Total	**335**	**361**

Tiger Reserves in India

Sl. No.	Year of Creation	Name of Tiger Reserve	State	Total Area (sq. km.)	Tiger population (1993)
1.	1973-74	Bandipur	Karnataka	866	66
2.	1973-74	Corbett	Uttar Pradesh	1316	123
3.	1973-74	Kanha	Madhya Pradesh	1945	100
4.	1973-74	Manas	Assam	2840	81
5.	1973-74	Melghat	Maharastra	1677	72
6.	1973-74	Palamau	Bihar	1026	44
7.	1973-74	Ranthambhore	Rajasthan	1334	36
8.	1973-74	Similipal	Orissa	2750	95
9.	1973-74	Sunderban	West Bengal	2585	251/263 (1997)
10.	1978-79	Periyar	Kerala	777	30
11.	1978-79	Sariska	Rajasthan	866	24
12.	1982-83	Buxa	West Bengal	759	29/32 (1997)
13.	1982-83	Indravati	Madhya Pradesh	2799	18
14.	1982-83	Nagarjunsagar	Andhra Pradesh	3568	51
15.	1982-83	Namdapha	Arunachal Pradesh	1985	47
16.	1987-88	Dudhwa	Uttar Pradesh	811	94
17.	1988-89	Kalakad-Mundanthrurai	Tamil Nadu	800	17
18.	1989-90	Valmik	Bihar	840	49
19.	1992-93	Pench	Madhya Pradesh	758	39
20.	1993-94	Tadoba-Andheri	Maharastra	620	N.A.
21.	1993-94	Bandhavgarh	Madhya Pradesh	1162	N.A.
22.	1994-95	Panna	Madhya Pradesh	542	N.A.
23.	1994-95	Dampha	Mizoram	500	N.A.
24.	1998-99	Bhadra	Karnataka	492	N.A.
25.	1998-99	Pench	Maharastra	257	N.A.
				33,875	1,266

POPULATION OF TIGER IN THE COUNTRY

SL.	State/Union Territories	TIGERS				
		1972	1979	1984	1989	1993
1	Andhra Pradesh	35	148	164	235	197
2	Assam	147	300	376	376	325
3	Bihar	85	110	138	157	137
4	Gujrat	8	7	9	9	5
5	Haryana	-	-	1	-	-
6	Himachal Pradesh	-	-	-	-	-
7	Jammu & Kashmir	-	-	-	-	-
8	Karnatake	102	156	202	257	305
9	Kerala	60	134	89	45	57
10	Madhya Pradesh	457	529	786	985	912
11	Manipur	1	10	6	31	*
12	Meghalaya	32	35	125	34	53
13	Nagaland	80	102	104	104	83
14	Orissa	142	173	202	243	226
15	Punjab	-	-	-	-	-
16	Rajasthan	74	79	96	99	64
17	Sikkim	-	-	2	4	2
18	Tamil Nadu	33	65	97	95	97
19	Tripura	7	6	5	-	-
20	Uttar Pradesh	262	487	698	735	465
21	West Bengal	73	296	352	353	335 (361 in 1997)
22	Arunachal Pradesh	69	139	219	135	180
23	Goa, Daman & Diu	-	-	-	2	3
24	Mizoram	-	65	33	18	28
25	A & N Islands	-	-	-	-	-
26	Dadra & Nagar Haveli	-	-	-	-	-
27	Maharastra	160	174	301	417	276
28	Lakshadweep	-	-	-	-	-
29	Chandigarh	-	-	-	-	-
30	Delhi	-	-	-	-	-
31	Pandichery	-	-	-	-	-
	Total	**1827**	**3015**	**4005**	**4334**	**3750**

- Census could not conducted during 1993.

PERSONS KILLED BY WILD ELEPHANT			
Year	**North Bengal**	**South Bengal**	**Total**
1986-87	34	0	34
1987-88	40	5	45
1988-89	63	18	81
1989-90	41	15	56
1990-91	73	15	88
1991-92	54	13	67
1992-93	74	6	80
1993-94	45	20	65
1994-95	34	10	44
1995-96	44	12	56
1996-97	46	6	52
1997-98	43	14	57
1998-99	43	4	47

PERSONS KILLED BY TIGER			
Year	**Sunderban**	**24-Parganas**	**Total**
1987-88	22	11	33
1988-89	14	13	27
1989-90	12	3	15
1990-91	41	4	45
1991-92	37	10	47
1992-93	35	7	42
1993-94	31	15	46
1994-95	5	2	7
1995-96	3	-	3
1996-97	2	-	2
1997-98	12	-	12
1998-99	2	1	3

Ex-gratia Relief paid for loss of lives and crop damaged by elephants (Rs. in lakhs)

YEAR	N. BENGAL	S. BENGAL	TOTAL
1986-87	-	2.53	2.53
1987-88	6.89	6.20	13.09
1988-89	9.14	6.39	15.53
1989-90	10.25	10.88	21.13
1990-91	18.12	12.17	30.29
1991-92	23.04	21.31	44.35
1992-93	24.70	21.88	46.58
1993-94	18.90	34.40	53.30
1994-95	17.50	40.94	58.44
1995-96	26.50	37.50	64.00
1996-97	25.61	37.91	63.52
1997-98	32.70	41.85	74.55
1998-99	43.45	37.00	80.45

PROJECT ELEPHANT

Performance during 1998-99

Item of works	Physical	Expenditure (Rs. in lakhs)
1. Survey, mapping & demarcation	87 ha.	2.53
2. Plantation of fodder spp.	286 ha.	24.06
3. Developing better water regime	200 ha.	8.00
4. Raising of bamboo nursery	153 ha.	2.82
5. Creation of bamboo plantation	62 ha.	4.17
6. Extension of non-browsable cropping pattern	13 ha.	1.04
7. Erection of energised fencing	16 km.	4.00
8. Support activities		0.99
9. Operational Cost for elephant driving squads		4.99
10. Public education and awareness generation		0.75
11. Training of mahut & other staff		1.75
12. Experimental trial on advance warning		1.02
13. Payment of exgratia		19.64
Total :		75.76

Year	Amount Spent (Rs. in lakhs)
1991-92	10.00
1992-93	29.51
1993-94	45.64
1994-95	30.06
1995-96	79.45
1996-97	67.62
1997-98	64.79
1998-99	75.76

INDIA ECO-DEVELOPMENT PROJECT

India's biodiversity is rich, often unique and increasingly endangered. It is one of the twelve megadiversity countries in the world, collectively accounting for 60-70 percent of the world's biodiversity. They are economically important, both globally and nationally. There are 75 national parks and 421 sanctuaries covering some 14 million hectares (4.3% of the total land area).

The biodiversity in India's forest grass-land, wetland and marine ecosystems faces many pressures. These include grazing, cutting of trees for fuel and timber, gathering of non timber forest products, hunting, uncontrolled fires and diversion of forest land for a large variety of conventional developmental activities.

India has a tradition of symbiotic relationships between the local communities and the forests, being managed on a sustainable basis. However, during the past forty years or so, Government's approach to the local people has sometimes been confrontational with significant negative impacts. The potential role of the local communities in protecting and managing the forests have been recognised and government has initiated programme to associate them as active and equal partners, in all stages of the management. It first started through JFM in the traditional forestry sector. The concept extended to the protected areas, has come to be known as "Ecodevelopment".

The project would conserve biodiversity by implementing the ecodevelopment strategy in and around seven protected areas (PAs) as well as villages in areas peripherial to the PA. The main objectives at the state level are :

(a) To improve the capacity of PA management to conserve biodiversity and increase opportunities for the local participation in PA management activities and decisions.

(b) To reduce negative impacts of the local people on biodiversity, reduce negative impacts of PAs on the local people, and increase collaboration of the local people in conservation efforts.

(c) To develop more effective and extensive support for ecodevelopment.

(d) To ensure effective management of this project.

India Eco-development Project has been launched in Buxa Tiger Reseve in the district of Jalpaiguri with the assistance of International Development Association and Global Environment Trust. The work initially started for "Project Preparation Facility" upto 1996-97. The works as per approved plan and programme have started from 1997-98.

Expenditure (Rs. in lakhs)

Items	1995-96	1996-97	1997-98	1998-99
I. Improved P.A. Management			75.69	193.26
II. Village Eco-development Programme			91.90	102.91
III. Environmental Education and Awarness Campaigns			3.34	2.65
IV. Impact Monitoring & Research			3.57	6.57
Total Expenditure :	8.95*	14.56*	174.60	305.39

* Project Preparation Facility.

Sundarban Biosphers Reserve

Creation of Sundarban Biosphere in 1989 ushered in a new era of conservation of bio-diversity in the inter-tidal zone of Sundarbans. This Reserve comprises an area of 9630 Km^2 including 4263 km^2 of mangrove forests. the balance area of the Biosphere Reserve (5367km^2) comprises lands outside the forests, but within the Intertidal zone.

The broad objectives of the programme of the Biosphere Reserve are:-

i) Identification and demarcation of the unique eco-system and its role for internation net-work in global eco-system conservation.

ii) Ecologically compatable economic development (Eco-eco- development) of the Intertidal zone.

iii) Research, training monitoring etc.

The development of fishery, particularly prawn-culture, apiary, oyester-culure, mushroom-culture, pearl-culture, horticulture, apart from providing basic needs of life, i.e. improvement of communication through water, removing illiteracy, providing drinking water have been aimed at. Apart from this, massive afforestation programme was included both inside and outside the forest.

Important on going schemes are:

A. 100% Centrally Sponsored Schemes:

i) Establishment of Sundarban Biosphere Reserve.

ii) Conservation and Management of Sundarban Mangroves.

iii) Integrated Afforestation and Eco-Development Project.

B. Area Oriented Fulwood and Fodder Programme (50% Centrally Sponsored Scheme).

Establishment of Sundarbans Biosphere Reserve

Performance during 1998-99

Item of works	Physical	Expenditure (Rs. in lakhs)	Remarks
Development of Data Base		0.55	Spillover of 1995-96
Educational Training & Awareness		1.00	,,
Apiary Education Training		0.05	Spillover of 1996-97
Printing of leaflets, posters etc.		1.00	,,
Afforestation	90 ha.	1.81	Spillover of 1997-98
Addl Income Generation Scheme	217 nos.	2.23	,,
Horticulture activities	20,000 nos.	2.30	,,
Total		**8.94**	
Creation of 1998 Plantation	58ha(Part)	3.30	Management Action Plan for 1998-99
Advance work for 1999 Plantation	255 ha	8.70	,,
Fuel wood & Fodder spp. Adv. Work	30 ha	0.82	,,
Soil Conservation	134 km	4.00	,,
Demonstration Project		1.55	,,
Social Welfare activities		6.00	,,
Education, Training & awareness		0.60	,,
Total		**24.97**	
Grand Total		**33.91**	

Year	Amount Spent (Rs. in lakhs)
1989-90	-
1990-91	32.00
1991-92	24.53
1992-93	25.88
1993-94	22.96
1994-95	95.49
1995-96	-
1996-97	27.69
1997-98	18.99
1998-99	33.91

Conservation & Management of Sundarbans Mangroves Performance during 1998-99

Item of Works	Physical	Expenditure (Rs. in lakhs)	Remarks
Documentation and preparation of status report		0.70	Spillover of 1995-96
Eco-restoration/ afforestation			
a) **Afforestation of intertidal blanks Including creation '97 plantation**	200ha(Part)	6.06	Spillover of 1997-98
b) **Advance work for '98 Mangrove plantations**	400 ha	10.00	,,
Creation of Mangrove plantation	300ha(Part)	5.26	,,
Establishment of GIS system		24.00	,,
Creation of 1998 plantations advance work for '99	400 ha	31.79	Management Action Plan for 1998-99
Mangrove Plantation	500ha(Part)	7.54	,,
Total :		**85.35**	

Year	Amount Spent (Rs. in lakhs)
1989-90	27.04
1990-91	33.24
1991-92	64.52
1992-93	50.23
1993-94	34.33
1994-95	59.68
1995-96	-
1996-97	19.65
1997-98	21.60
1998-99	85.35

Biosphere Reserves set up in India

1998-99.

Sl. No.	Name of the Site	Date of Notification	Location (State)
1.	Nilgiri	1.8.86	Part of Wynad, Nagarhore, Bandipur and Madumalai, Nilambur, Silent Valley and Siruvani Hills (Tamil Nadu, Kerala and Karnataka)
2.	Nanda Devi	18.1.88	Part of Chamoli, Pithoragarh & Almora Districts (Uttar Pradesh)
3.	Nokrek	1.9.88	Part of Garo Hills (Meghalaya)
4.	Manas	14.3.89	Part of Kokrajhar, Bongaigaon, Barpeta, Nalbari, Kamprup and Darang Districts (Assam)
5.	Sunderbans	29.3.89	Part of delta of Ganges & Brahamaputra river system (West Bengal)
6.	Gulf of Mannar	18.2.89	Indian Part of Gulf of Mannar between India and Sri Lanka (Tamil Nadu)
7.	Great Nicobar	6.1.89	Southern most islands of Andaman and Nicobar (A&N) Islands
8.	Similipal	21.6.94	Part of Mayurbhanj district (Orissa)
9.	Dibru-Saikhowa	28.7.97	Part of Dilbrugarh and Tinsukia Districts (Assam)
10.	Dehang Debang	2.9.98	Part of Siang and Debang Valley in Arunachal Pradesh

CROCODILE PROJECT IN SUNDARBANS

(BHAGABATPUR)

YEAR	NO OF CROCODILES RELEASED		
	MALE	FEMALE	TOTAL
1979	13	27	40
1982	3	22	25
1983	6	12	18
1984	6	15	21
1986	1	29	30
1987	8	22	30
1988	16	11	27
1989	1	12	13
1991	11	9	20
1993	9	12	21
1994	3	18	21
1995	5	24	29
1996	5	10	15
1997	4	10	14
1998	4	11	15

Location of Release :

Pirkhali-1, Pirkhali-2, Pirkhali-6, Matla-1, Matla-2, Gosaba-3, Netiadhopani, Chamta-2, Chamta-4, Gona-2, Chand Khali-1, Baghmara-1, Burirdabri, Chobardi-2, Arbesi-5, Panchamukhani-3, Sajnakhali Pool, Keorasuti-4.

WETLAND

Wetland are transitional areas between aquatic and terrestrial ecosystems where the water table is usually at or near the surface or the land is covered by shallow water. They include marshes, swamps, flood-plains, bogs, peatlands, shallow ponds, littoral zones of larger water bodies, tidal marshes, etc.

India is very rich in wetland resources and exhibit significant ecological diversity, primarily because of variability in climatic conditions and changing topography. Unfortunately, many such areas have been converted for agriculture, industry or settlements. A great number have been affected by industrial effluent, sewage, household wastes and sedimentation due to ecological degradation in catchment areas.

Realising the crucial role of the wetland ecosystems in flood control, recharging of aquifers, regulating water quality, reducing sediment load and pollution abatement, its potential for aquaculture and as breeding ground for waterfowls, the Ministry of Environment and Forests constituted an Expert Group in 1983 for compiling information on the ecological status of wetland in the country. Earlier to this in 1972, a survey had been initiated to collect some basic information which was subsequently updated.

	India		West Bengal	
	Nos.	Area (ha)	Nos.	Area (ha)
Natural Wetlands :	2167	14,50,871	54	2,91,963
Manmade Wetlands :	65253	25,89,266	9	52,564
Total :	67,420	40,40,137	63	3,44,527

Source : : Wetland of India. A Directory, Ministry of Evironment and Forests. Govt. of India , New Delhi, 1990.